

*The* LADIES' *Diary*  
OR  
WOMAN'S ALMANACK,

For the Year of our LORD 1783;  
Being the Third after BISSEXTILE, or LEAP-YEAR.  
Containing New Improvements in ARTS and SCIENCES,  
And many Entertaining PARTICULARS:  
Designed for the *Use* and *Diversion* of the

FAIR-SEX.

The Eightieth ALMANACK Published of this Kind.



VIRTUE and SENSE, with FEMALE-SOFTNESS join'd,  
(ALL that subdues and captivates Mankind!)  
In BRITAIN'S Matchless FAIR resplendent shine;  
THEY rule LOVE'S Empire by a Right Divine:  
Justly their Charms the astonish'd World admires,  
Whom *Royal CHARLOTTE's* bright Example fires.

Printed for the COMPANY of STATIONERS,  
And sold by JOHN WILKIE, at their Hall in Ludgate-Street.

[Price, stitched, NINE PENCE.]

Y. of Cbrist. Ys. since. Y. of Cbrist. Ys. since.

|      |                                 |     |     |      |                                 |   |    |
|------|---------------------------------|-----|-----|------|---------------------------------|---|----|
| 1600 | King Charles I. born            | -   | 183 | 1713 | Peace with France procl.        | - | 70 |
| 1603 | Q. Eliz. died, K. Ja. succ.     | 180 |     | 1714 | Q. Ann died, K. Geo. I. succ.   | - | 6  |
| 1603 | A great Plague in London        | 180 |     | 1715 | Rebellion in the north          | - | 6  |
| 1605 | Popish Gun-powder Plot          | 178 |     | 1716 | A very great frost              | - | 6  |
| 1616 | Shakspeare the poet died        | 167 |     | 1726 | Sir Isaac Newton died           | - |    |
| 1625 | K. James died, Cha. I. succ.    | 158 |     | 1727 | K. Geo. I died, Geo. II. succ.  | 5 |    |
| 1641 | Bloody Irish massacre           | -   | 142 | 1739 | War against Spain declared      | - |    |
| 1642 | Sir I. Newton born, Dec. 25     | 141 |     | 1739 | A very great frost              | - | 4  |
| 1649 | K. Charles I. beheaded          | -   | 134 | 1743 | A great comet appeared          | - | 4  |
| 1658 | Oliver Cromwell died            | -   | 125 | 1744 | War against France declared     | - |    |
| 1660 | K. Charles II. restored         | -   | 123 | 1745 | Rebellion in Scotland           | - |    |
| 1662 | Royal Society instituted        | 121 |     | 1748 | A general peace                 | - |    |
| 1665 | Died of the plague 68,586       | 118 |     | 1750 | Westminster bridge finished     | - |    |
| 1666 | Great fire in London            | -   | 117 | 1752 | Date and Calendar altered       | - |    |
| 1666 | War against Denmark decl.       | 117 |     | 1756 | War against France declared     | - |    |
| 1667 | Peace with Hol. Fr. & Denm.     | 116 |     | 1760 | K. Geo. II. died, G. III. succ. | 2 |    |
| 1672 | War against Holland decl.       | 111 |     | 1762 | American philos. soc. instit.   | 2 |    |
| 1672 | Halfpence & Farth. coined       | 111 |     | 1762 | War against Spain declared      | 2 |    |
| 1674 | Peace with Holland procl.       | 109 |     | 1763 | Peace with France & Spain       | - |    |
| 1679 | Habeas Corpus act passed        | 104 |     | 1765 | Otaheite discovered             | - |    |
| 1685 | K. Cha. II. died, Ja. II. succ. | 98  |     | 1770 | Blackfriars bridge finished     | 1 |    |
| 1688 | Prince of Orange landed         | -   | 95  | 1772 | A revolution in Denmark         | - |    |
| 1688 | K. James II. abdicated          | -   | 95  | 1772 | A revolution in Sweden          | - |    |
| 1689 | Wm. and Mary crowned            | 94  |     | 1775 | War against America begun       | - |    |
| 1693 | Hackney coaches established     | 90  |     | 1776 | America declared independent    | - |    |
| 1702 | K. Wm. died, Q. Ann succ.       | 81  |     | 1778 | French treaty with America      | - |    |
| 1702 | War against France declared     | 81  |     | 1778 | War against Fr. commenced       | - |    |
| 1707 | England & Scotland united       | 76  |     | 1779 | War against Spain begun         | - |    |

BIRTH-DAYS, [N.S.] and YEARS, of the ROYAL FAMILY

|                                             |                                              |
|---------------------------------------------|----------------------------------------------|
| <b>KING GEORGE III.</b> June 4, 1738        | <b>Prince Adolph. Fred.</b> Feb. 24, 1711    |
| <b>Prince of Wales,</b> August 12, - 1762   | <b>Princess Mary,</b> April 25, - - 1711     |
| <b>Prince Frederick,</b> August 16, 1763    | <b>Princess Sophia,</b> Nov. 3, - - 1717     |
| <b>Prince William Henry,</b> Aug. 21, 1765  | <b>Prince Octavius,</b> Feb. 23, - 1717      |
| <b>Prs. Charl. Aug. Mat.</b> Sept. 29, 1766 | <b>Queen Charlotte,</b> May 19, - - 1744     |
| <b>Prince Edward,</b> Nov. 2, - - 1767      | <b>Prs. Amelia,</b> June 10, - - 1719        |
| <b>Prs. Augusta Sophia,</b> Nov. 8, - 1768  | <b>Prs. Augusta of Brunsw.</b> Aug. 13, 1719 |
| <b>Prs. Elizabeth,</b> May 22, - - 1770     | <b>Duke of Gloucester,</b> Nov. 25, 1719     |
| <b>Prince Ernest Augustus,</b> June 5, 1771 | <b>Duke of Cumberland,</b> Nov. 7, 1719      |
| <b>Prince Aug. Fred.</b> Jan. 27, - 1773    |                                              |

| TABLE of BIRTHS of the Principal SOVIET 1934 |               |
|----------------------------------------------|---------------|
| NAME                                         | DATE OF BIRTH |
| 1. K. K. K.                                  | 1934          |
| 2. L. L. L.                                  | 1934          |
| 3. M. M. M.                                  | 1934          |
| 4. N. N. N.                                  | 1934          |
| 5. O. O. O.                                  | 1934          |
| 6. P. P. P.                                  | 1934          |
| 7. Q. Q. Q.                                  | 1934          |
| 8. R. R. R.                                  | 1934          |
| 9. S. S. S.                                  | 1934          |
| 10. T. T. T.                                 | 1934          |
| 11. U. U. U.                                 | 1934          |
| 12. V. V. V.                                 | 1934          |
| 13. W. W. W.                                 | 1934          |
| 14. X. X. X.                                 | 1934          |
| 15. Y. Y. Y.                                 | 1934          |
| 16. Z. Z. Z.                                 | 1934          |
| 17. A. A. A.                                 | 1934          |
| 18. B. B. B.                                 | 1934          |
| 19. C. C. C.                                 | 1934          |
| 20. D. D. D.                                 | 1934          |
| 21. E. E. E.                                 | 1934          |
| 22. F. F. F.                                 | 1934          |
| 23. G. G. G.                                 | 1934          |
| 24. H. H. H.                                 | 1934          |
| 25. I. I. I.                                 | 1934          |
| 26. J. J. J.                                 | 1934          |
| 27. K. K. K.                                 | 1934          |
| 28. L. L. L.                                 | 1934          |
| 29. M. M. M.                                 | 1934          |
| 30. N. N. N.                                 | 1934          |
| 31. O. O. O.                                 | 1934          |
| 32. P. P. P.                                 | 1934          |
| 33. Q. Q. Q.                                 | 1934          |
| 34. R. R. R.                                 | 1934          |
| 35. S. S. S.                                 | 1934          |
| 36. T. T. T.                                 | 1934          |
| 37. U. U. U.                                 | 1934          |
| 38. V. V. V.                                 | 1934          |
| 39. W. W. W.                                 | 1934          |
| 40. X. X. X.                                 | 1934          |
| 41. Y. Y. Y.                                 | 1934          |
| 42. Z. Z. Z.                                 | 1934          |
| 43. A. A. A.                                 | 1934          |
| 44. B. B. B.                                 | 1934          |
| 45. C. C. C.                                 | 1934          |
| 46. D. D. D.                                 | 1934          |
| 47. E. E. E.                                 | 1934          |
| 48. F. F. F.                                 | 1934          |
| 49. G. G. G.                                 | 1934          |
| 50. H. H. H.                                 | 1934          |
| 51. I. I. I.                                 | 1934          |
| 52. J. J. J.                                 | 1934          |
| 53. K. K. K.                                 | 1934          |
| 54. L. L. L.                                 | 1934          |
| 55. M. M. M.                                 | 1934          |
| 56. N. N. N.                                 | 1934          |
| 57. O. O. O.                                 | 1934          |
| 58. P. P. P.                                 | 1934          |
| 59. Q. Q. Q.                                 | 1934          |
| 60. R. R. R.                                 | 1934          |
| 61. S. S. S.                                 | 1934          |
| 62. T. T. T.                                 | 1934          |
| 63. U. U. U.                                 | 1934          |
| 64. V. V. V.                                 | 1934          |
| 65. W. W. W.                                 | 1934          |
| 66. X. X. X.                                 | 1934          |
| 67. Y. Y. Y.                                 | 1934          |
| 68. Z. Z. Z.                                 | 1934          |
| 69. A. A. A.                                 | 1934          |
| 70. B. B. B.                                 | 1934          |
| 71. C. C. C.                                 | 1934          |
| 72. D. D. D.                                 | 1934          |
| 73. E. E. E.                                 | 1934          |
| 74. F. F. F.                                 | 1934          |
| 75. G. G. G.                                 | 1934          |
| 76. H. H. H.                                 | 1934          |
| 77. I. I. I.                                 | 1934          |
| 78. J. J. J.                                 | 1934          |
| 79. K. K. K.                                 | 1934          |
| 80. L. L. L.                                 | 1934          |
| 81. M. M. M.                                 | 1934          |
| 82. N. N. N.                                 | 1934          |
| 83. O. O. O.                                 | 1934          |
| 84. P. P. P.                                 | 1934          |
| 85. Q. Q. Q.                                 | 1934          |
| 86. R. R. R.                                 | 1934          |
| 87. S. S. S.                                 | 1934          |
| 88. T. T. T.                                 | 1934          |
| 89. U. U. U.                                 | 1934          |
| 90. V. V. V.                                 | 1934          |
| 91. W. W. W.                                 | 1934          |
| 92. X. X. X.                                 | 1934          |
| 93. Y. Y. Y.                                 | 1934          |
| 94. Z. Z. Z.                                 | 1934          |
| 95. A. A. A.                                 | 1934          |
| 96. B. B. B.                                 | 1934          |
| 97. C. C. C.                                 | 1934          |
| 98. D. D. D.                                 | 1934          |
| 99. E. E. E.                                 | 1934          |
| 100. F. F. F.                                | 1934          |

|                                       |                                    |
|---------------------------------------|------------------------------------|
| Cha. Frederick, King of Prussia, 1712 | Maria, Queen of Portugal - 1712    |
| Achmet IV. Grand Seignor - 1715       | Joseph Ben. Aug. Emp. Germ. - 1715 |
| Charles, King of Spain, - - 1716      | Gustavus, King of Sweden, - 1716   |
| Pius VI. Pope - - - - 1717            | William V. Stadtholder, - - 1717   |
| Victor Amada Maria, K. Sardinia 1726  | Christian VII. K. of Denmark, 1726 |
| Catherine, Empress of Russia, 1729    | Ferdinand IV. King of Sicily, 1729 |
| Stanislaus Aug. King of Poland 1732   | Lewis XVI. King of France, - 1732  |

New Moon, 3d, 40 m. past 7 morn.  
 First Quarter, 10th, 22 m. past 9 morn.  
 Full Moon, 18th, 11 m. past 2 aftern.  
 Last Quarter, 26th, 2 m. past 3 morn.

Sun enters ♈  
 19d. 13h. 48m.

|    |    |                               |   |    |    |                 |    |         |    |
|----|----|-------------------------------|---|----|----|-----------------|----|---------|----|
| 1  | W  | Circumcision                  | 8 | 53 | 55 | 23 <sup>s</sup> | 0  | 6 m 32  | 28 |
| 2  | Th |                               |   | 4  | 56 | 22              | 55 | 7 53    | 29 |
| 3  | F  |                               |   | 3  | 57 |                 | 49 | Q sets  | N  |
| 4  | S  |                               |   | 3  | 57 |                 | 43 | 5 a 13  | 2  |
| 5  | E  | 2 S. af. Christ. Old Chr. Day | 2 | 58 |    |                 | 36 | 6 44    | 3  |
| 6  | M  | Epiphany. Twelfth Day         | 1 | 59 |    |                 | 29 | 8 12    | 4  |
| 7  | Tu |                               | 0 | 4  | 0  |                 | 22 | 9 32    | 5  |
| 8  | W  | Lucian                        | 7 | 59 |    |                 | 14 | 10 48   | 6  |
| 9  | Th |                               |   | 58 |    |                 | 2  | 5 morn  | 7  |
| 10 | F  |                               |   | 57 |    | 3 21            | 56 | 0 2     | 8  |
| 11 | S  |                               |   | 56 |    | 4               | 47 | 1 16    | 9  |
| 12 | E  | 2 S. af. Epiph. O.N.Y. Day    |   | 55 |    | 5               | 37 | 2 30    | 10 |
| 13 | M  | Plow Mon. Hilary. Cam. T.     |   | 54 |    | 6               | 27 | 3 45    | 11 |
| 14 | Tu | Chr. T. begins [beg.          |   | 53 |    | 7               | 17 | 4 55    | 12 |
| 15 | W  |                               |   | 52 |    | 8               | 6  | 6 3     | 13 |
| 16 | Th |                               |   | 51 |    | 9 20            | 54 | 7 0     | 14 |
| 17 | F  | Old Twelfth-Day               |   | 49 |    | 11              | 43 | 7 47    | 15 |
| 18 | S  | Q. Cha. B. Day kept. Prisca   |   | 48 |    | 12              | 31 | Q rises | F  |
| 19 | E  | 2 Sunday after Epiphany       |   | 47 |    | 13              | 18 | 5 a 4   | 17 |
| 20 | M  | Fabian. Hilary 1st Ret.       |   | 45 |    | 15              | 5  | 6 22    | 18 |
| 21 | Tu | Agnes                         |   | 44 |    | 16 19           | 52 | 7 42    | 19 |
| 22 | W  | Vincent                       |   | 42 |    | 18              | 38 | 8 59    | 20 |
| 23 | Th | Hilary Term begins            |   | 41 |    | 19              | 24 | 10 16   | 21 |
| 24 | F  |                               |   | 40 |    | 20              | 10 | 11 35   | 22 |
| 25 | S  | Conversion of St. Paul        |   | 38 |    | 22 18           | 55 | morn    | 23 |
| 26 | E  | 3 Sunday after Epiphany       |   | 37 |    | 23              | 40 | 1 0     | 24 |
| 27 | M  | Pr. Aug. F. b. 1773 Hil. 2R.  |   | 35 |    | 25              | 24 | 2 28    | 25 |
| 28 | Tu |                               |   | 33 |    | 27              | 9  | 3 58    | 26 |
| 29 | W  |                               |   | 32 |    | 28 17           | 53 | 5 23    | 27 |
| 30 | Th | K. Cha. I. mart.              |   | 30 |    | 30              | 36 | 6 32    | 28 |
| 31 | F  |                               |   | 28 |    | 32              | 19 | 7 19    | 29 |

| Days | L. of D. | Day Inc. | D. breaks | Tw. ends | Sun East | Cl. bef. S. | 7 Stars So. |
|------|----------|----------|-----------|----------|----------|-------------|-------------|
| 1    | 7 50     | 0 6      | 6 0       | 6 0      | 4 41     | 4 7         | 8 a 44      |
| 6    | 58       | 14       | 5 58      | 2        | 43       | 6 25        | 22          |
| 11   | 8 8      | 24       | 54        | 6        | 46       | 8 30        | 0           |
| 16   | 18       | 34       | 49        | 11       | 49       | 10 19       | 7 39        |
| 21   | 32       | 48       | 44        | 16       | 53       | 11 51       | 13          |
| 26   | 46       | 1 2      | 38        | 22       | 58       | 13 4        | 6 56        |

New Moon, 1st, 50 m. past 6 night.

First Quarter, 9th, 18 m. past 5 morn.

Full Moon, 17th, 2 m. past 7 morn.

Last Quarter, 24th, 15 m. past 11 morn.

Sun enters ♈  
18 d. 4 h. 36 m.

| M  | D  | Sundays, Holydays, &c.       | Sun<br>rises | Sun<br>sets | Sun's<br>decl. | ☾ rises<br>& sets |    |
|----|----|------------------------------|--------------|-------------|----------------|-------------------|----|
| 1  | S  | Epiph.                       | 7 27         | 4 33        | 17 8 2         | ☾ sets            | N  |
| 2  | M  | Prisfor Cand. Day, 1st       | 25           | 35          | 16 45          | 5 a 30            | 2  |
| 3  | M  | Blase. Hilary, 3d Return     | 23           | 37          | 28             | 6 55              | 3  |
| 4  | Tu |                              | 22           | 38          | 10             | 8 18              | 4  |
| 5  | W  | Agatha                       | 20           | 40          | 15 51          | 9 36              | 5  |
| 6  | Th |                              | 18           | 42          | 33             | 10 51             | 6  |
| 7  | F  |                              | 16           | 44          | 14             | morn              | 7  |
| 8  | S  |                              | 14           | 46          | 14 55          | 0 6               | 8  |
| 9  | M  | Sunday after Epiphany        | 13           | 47          | 36             | 1 21              | 9  |
| 10 | M  | Hilary, 4th Return           | 11           | 49          | 17             | 2 36              | 10 |
| 11 | Tu |                              | 9            | 51          | 13 57          | 3 47              | 11 |
| 12 | W  | Quinquagesima Term ends      | 7            | 53          | 37             | 4 48              | 12 |
| 13 | Th | Old Candlemas Day            | 5            | 55          | 17             | 5 38              | 13 |
| 14 | F  | Valentine                    | 3            | 57          | 12 57          | 6 16              | 14 |
| 15 | S  |                              | 1            | 59          | 36             | 6 43              | 15 |
| 16 | M  | Septuagesima Sunday          | 0 5          | 0           | 15             | 7 2               | 16 |
| 17 | Tu |                              | 6 58         | 2 11        | 54             | ☾ rises           | 17 |
| 18 | W  |                              | 56           | 4           | 33             | 6 a 44            | 18 |
| 19 | Th |                              | 54           | 6           | 12             | 8 2               | 19 |
| 20 | F  |                              | 52           | 8           | 10 50          | 9 23              | 20 |
| 21 | S  |                              | 50           | 10          | 29             | 10 47             | 21 |
| 22 | M  | [1779]                       | 48           | 12          | 7              | morn              | 22 |
| 23 | Tu | Sexages. S. Pr. Octavius b.  | 46           | 14          | 9 45           | 0 15              | 23 |
| 24 | W  | St. Matthias, Pr. Ad. Fr. b. | 44           | 16          | 23             | 1 45              | 24 |
| 25 | Th | [1774]                       | 42           | 18          | 1              | 3 9               | 25 |
| 26 | F  |                              | 40           | 20          | 8 38           | 4 23              | 26 |
| 27 | S  |                              | 38           | 22          | 16             | 5 14              | 27 |
| 28 | M  |                              | 36           | 24          | 7 53           | 5 49              | 28 |

| Days | L. of D. | Day Inc. | D. breaks | Tw. ends | Sun East | Cl. bef. S. | 7 Stars S. |
|------|----------|----------|-----------|----------|----------|-------------|------------|
| 1    | 9 6      | 1 22     | 5 31      | 6 29     | 5 4      | 14 5        | 6 a 11     |
| 6    | 24       | 40       | 24        | 37       | 9        | 33          | 12         |
| 11   | 42       | 58       | 16        | 45       | 14       | 41          | 5          |
| 16   | 10 0     | 2 16     | 7         | 54       | 20       | 29          | 11         |
| 21   | 20       | 16       | 4 58      | 7 3      | 26       | 13 59       | 16         |
| 26   | 40       | 56       | 49        | 12       | 32       | 14          | 21         |



New Moon, 3d, 13 m. past 7 morn.

First Quarter, 11th, 1 m. past 2 morn.

Full Moon, 18th, 23 m. past 9 night.

Last Quarter, 25th, 57 m. past 5 aftern.

Sun enters  $\gamma$   
20 d. 5 h. 4 m.

|    |    |                         |    |    |    |    |    |        |      |     |    |    |
|----|----|-------------------------|----|----|----|----|----|--------|------|-----|----|----|
| 1  | S  | David                   | 6  | 34 | 5  | 26 | 7  | 8      | 30   | 6 m | 13 | 29 |
| 2  | M  | Quinquagesima Sun       | 32 | 28 |    |    | 7  | 6      | 31   |     |    | 30 |
| 3  | Tu | Shrove-Tuesday          | 30 | 30 | 6  | 44 |    | 6      | sets |     | N  |    |
| 4  | W  | Ash-Wednesday           | 29 | 31 |    | 21 | 7  | a      | 11   |     |    | 2  |
| 5  | Th |                         | 27 | 33 | 5  | 58 | 8  |        | 29   |     |    | 3  |
| 6  | F  | Perpetua                | 25 | 35 |    | 35 | 9  |        | 47   |     |    | 4  |
| 7  | S  |                         | 23 | 37 |    | 12 | 11 |        | 5    |     |    | 5  |
| 8  | M  | Quadrages. 1 S. in Lent | 21 | 39 | 4  | 48 |    | morn   |      |     |    | 6  |
| 9  | Tu |                         | 19 | 41 |    | 25 | 0  |        | 21   |     |    | 7  |
| 10 | W  |                         | 17 | 43 |    | 1  | 1  |        | 34   |     |    | 8  |
| 11 | Th | Ember Week. Gregory     | 15 | 45 | 3  | 38 | 2  |        | 43   |     |    | 9  |
| 12 | F  |                         | 13 | 47 |    | 14 | 3  |        | 38   |     |    | 10 |
| 13 | S  |                         | 11 | 49 | 2  | 51 | 4  |        | 19   |     |    | 11 |
| 14 | M  |                         | 9  | 51 |    | 27 | 4  |        | 51   |     |    | 12 |
| 15 | Tu | 2 Sunday in Lent        | 7  | 53 |    | 3  | 5  |        | 14   |     |    | 13 |
| 16 | W  |                         | 5  | 55 | 1  | 40 | 5  |        | 29   |     |    | 14 |
| 17 | Th | St. Patrick             | 3  | 57 |    | 16 | 5  |        | 41   |     |    | 15 |
| 18 | F  | Edw. K. W. S.           | 1  | 59 | 0  | 52 |    | (rises |      | F   |    |    |
| 19 | S  |                         | 5  | 59 | 6  | 1  | 29 | 7      | a    | 13  |    | 17 |
| 20 | M  |                         | 57 | 3  |    | 5  | 8  |        | 36   |     |    | 18 |
| 21 | Tu | Benedict                | 55 | 5  | on | 19 | 10 |        | 6    |     |    | 19 |
| 22 | W  |                         | 53 | 7  |    | 42 | 11 |        | 36   |     |    | 20 |
| 23 | Th | 3 Sunday in Lent        | 51 | 9  | 1  | 6  |    | morn   |      |     |    | 21 |
| 24 | F  |                         | 49 | 11 |    | 30 | 1  |        | 5    |     |    | 22 |
| 25 | S  | Annunc. or Lady-Day     | 47 | 13 |    | 53 | 2  |        | 22   |     |    | 23 |
| 26 | M  |                         | 45 | 15 | 2  | 17 | 3  |        | 22   |     |    | 24 |
| 27 | Tu |                         | 43 | 17 |    | 40 | 4  |        | 1    |     |    | 25 |
| 28 | W  |                         | 41 | 19 | 3  | 4  | 4  |        | 27   |     |    | 26 |
| 29 | Th |                         | 39 | 21 |    | 27 | 4  |        | 46   |     |    | 27 |
| 30 | F  | 4th, or Midlent Sunday  | 37 | 23 |    | 50 | 5  |        | 2    |     |    | 28 |
| 31 | S  |                         | 35 | 25 |    | 14 | 5  |        | 15   |     |    | 20 |

| Days | L. of D. | Day Inc. | D. breaks | T w. ends | Sun East | C. of D. | Stars so. |
|------|----------|----------|-----------|-----------|----------|----------|-----------|
| 1    | 10 52    | 3 8      | 4 44      | 7 17      | 5 36     | 12 40    | 4 2 44    |
| 6    | 11 10    |          | 26 33     | 29        | 42       | 11 33    | 26        |
| 11   | 30       |          | 46 22     | 40        | 48       | 10 17    | 8         |
| 16   | 50       | 4 6      | 12        | 50        | 55       | 8 51     | 3 49      |
| 21   | 12 10    |          | 26 2      | 8 1       | 6 1      | 7 21     | 31        |
| 26   | 30       |          | 46 3 50   | 13        | 7        | 5 48     | 13        |

New Moon, 1st, 50 m. past 8 night.  
 First Quarter, 9th, 40 m. past 9 night.  
 Full Moon, 17th, 47 m. past 8 morn.  
 Last Quarter, 23d, 23 m. past 12 night.

Sun enters 8  
 19 d. 17 h. 52 m.

|    |    |                          |   |    |   |    |    |    |      |       |      |    |
|----|----|--------------------------|---|----|---|----|----|----|------|-------|------|----|
| 1  | Tu |                          | 5 | 33 | 6 | 27 | 4  | n  | 37   | Q     | fets | N  |
| 2  | W  |                          |   | 31 |   | 29 | 5  | 0  | 7    | a     | 33   | 1  |
| 3  | Th | Richard                  |   | 29 |   | 31 |    | 23 | 8    | 50    |      | 2  |
| 4  | F  | St. Ambrose              |   | 27 |   | 33 |    | 46 | 10   | 9     |      | 3  |
| 5  | S  | Old Lady-Day             |   | 25 |   | 35 | 6  | 8  | 11   | 26    |      | 4  |
| 6  | F  | Sunday in Lent           |   | 23 |   | 37 |    | 31 | morn |       |      | 5  |
| 7  | M  |                          |   | 21 |   | 39 |    | 54 | 0    | 36    |      | 6  |
| 8  | Tu |                          |   | 19 |   | 41 | 7  | 16 | 1    | 36    |      | 7  |
| 9  | W  |                          |   | 17 |   | 43 |    | 39 | 2    | 23    |      | 8  |
| 10 | Th |                          |   | 16 |   | 44 | 8  | 1  | 2    | 56    |      | 9  |
| 11 | F  | Cam. Term ends           |   | 14 |   | 46 |    | 23 | 3    | 21    |      | 10 |
| 12 | S  | Orf. Term ends           |   | 12 |   | 48 |    | 45 | 3    | 42    |      | 11 |
| 13 | F  | G.S. in Lent, Palm-Sund. |   | 10 |   | 50 | 9  | 7  | 3    | 55    |      | 12 |
| 14 | M  |                          |   | 8  |   | 52 |    | 28 | 4    | 8     |      | 13 |
| 15 | Tu |                          |   | 6  |   | 54 |    | 50 | 4    | 20    |      | 14 |
| 16 | W  |                          |   | 4  |   | 56 | 10 | 11 | 4    | 32    |      | 15 |
| 17 | Th | Maundy Thursday          |   | 2  |   | 58 |    | 32 | Q    | rises | F    |    |
| 18 | F  | Good Friday              |   | 0  | 7 | 0  |    | 53 | 9    | a     | 19   | 17 |
| 19 | S  | Alphege                  | 4 | 58 |   | 2  | 11 | 14 | 10   | 52    |      | 18 |
| 20 | M  | Easter-Day               |   | 57 |   | 3  |    | 34 | morn |       |      | 19 |
| 21 | Tu |                          |   | 55 |   | 5  |    | 55 | 0    | 17    |      | 20 |
| 22 | W  |                          |   | 53 |   | 7  | 12 | 15 | 1    | 25    |      | 21 |
| 23 | Th | St. George               |   | 51 |   | 9  |    | 35 | 2    | 10    |      | 22 |
| 24 | F  |                          |   | 49 |   | 11 |    | 55 | 2    | 41    |      | 23 |
| 25 | S  | St. Mark. Prs. Mary bo.  |   | 47 |   | 13 | 13 | 15 | 3    | 2     |      | 24 |
| 26 | Tu |                          |   | 45 |   | 15 |    | 34 | 3    | 16    |      | 25 |
| 27 | W  | 1st. East. Low-Sund.     |   | 44 |   | 16 |    | 53 | 3    | 28    |      | 26 |
| 28 | Th |                          |   | 42 |   | 18 | 14 | 12 | 3    | 37    |      | 27 |
| 29 | F  |                          |   | 40 |   | 20 |    | 31 | 3    | 47    |      | 28 |
| 30 | S  | Orf. and Cam. T. begin   |   | 38 |   | 22 |    | 49 | 4    | 0     |      | 29 |

| Days | L. of D. | Day Inc. | D. breaks | Tw. ends | Sun East | Cl. bef. S. | 7 Stars So. |
|------|----------|----------|-----------|----------|----------|-------------|-------------|
| 1    | 12 54    | 5 10     | 3 33      | 8 28     | 6 15     | 3 56        | 2 a 51      |
| 6    | 13 14    | 30       | 21        | 40       | 21       | 2 27        | 33          |
| 11   | 32       | 48       | 6         | 55       | 27       | 1 2         | 14          |
| 16   | 52       | 6 8      | 2 54      | 9 7      | 33       | 0 af. 16    | 56          |
| 21   | 14 10    | 26       | 40        | 21       | 39       | 1 25        | 37          |
| 26   | 30       | 46       | 25        | 37       | 44       | 2 23        | 18          |

N° 80.

May hath xxxi Days.

7

New Moon, 1st, 16 m. past 11 morn.  
 First Quarter, 9th, 54 m. past 2 aftern.  
 Full Moon, 16th, 31 m. past 5 aftern.  
 Last Quarter, 23d, 40 m. past 7 morn.  
 New Moon, 31st, 4 m. past 2 morn.

Sun enters II  
 zod. 18h. 30 m.

St. Philip & St. James

|    |    |                               |   |    |   |    |    |    |    |       |      |    |    |
|----|----|-------------------------------|---|----|---|----|----|----|----|-------|------|----|----|
| 1  | Th | St. Philip & St. James        | 4 | 37 | 7 | 23 | 15 | n  | 8  | Q     | fets | N  |    |
| 2  | F  |                               |   | 35 |   | 25 |    |    | 26 | 9     | a    | 14 | 2  |
| 3  | S  | Invention of the Cross        |   | 33 |   | 27 |    |    | 43 | 10    |      | 27 | 3  |
| 4  | S  | 2 Sunday after Easter         |   | 31 |   | 29 | 16 | 1  | 11 |       | 31   |    | 4  |
| 5  | M  | Easter Term, 1st Return       |   | 30 |   | 30 |    | 18 |    | morn  |      |    | 5  |
| 6  | Tu | John Ev. a P. L.              |   | 28 |   | 32 |    |    | 35 | 0     | 23   |    | 6  |
| 7  | W  | Easter Term begins            |   | 26 |   | 34 |    |    | 52 | 1     | 1    |    | 7  |
| 8  | Th |                               |   | 25 |   | 35 | 17 | 8  | 1  | 30    |      |    | 8  |
| 9  | F  |                               |   | 23 |   | 37 |    |    | 24 | 1     | 50   |    | 9  |
| 10 | S  |                               |   | 21 |   | 39 |    |    | 40 | 2     | 5    | 10 |    |
| 11 | S  | 3 Sunday after Easter         |   | 20 |   | 40 |    |    | 55 | 2     | 18   | 11 |    |
| 12 | M  | Old May D. East. T. 2 Ret.    |   | 18 |   | 42 | 18 | 11 | 2  | 30    |      | 12 |    |
| 13 | Tu |                               |   | 17 |   | 43 |    |    | 26 | 2     | 42   | 13 |    |
| 14 | W  |                               |   | 15 |   | 45 |    |    | 40 | 2     | 54   | 14 |    |
| 15 | Th |                               |   | 14 |   | 46 |    |    | 54 | 3     | 8    | 15 |    |
| 16 | F  |                               |   | 12 |   | 48 | 19 | 8  | Q  | rises |      | F  |    |
| 17 | S  | 4 Sunday after Easter         |   | 11 |   | 49 |    |    | 22 | 9     | a    | 54 | 17 |
| 18 | S  | Q. Charl. b. 1744 Dunstan.    |   | 9  |   | 51 |    |    | 35 | 11    | 12   | 18 |    |
| 19 | M  | [East. T. 3 Ret.]             |   | 8  |   | 52 |    |    | 48 |       | morn | 19 |    |
| 20 | Tu |                               |   | 7  |   | 53 | 20 | 1  | 0  |       | 9    | 20 |    |
| 21 | W  | Frs. Eliz. born, 1770         |   | 5  |   | 55 |    |    | 13 | 0     | 44   | 21 |    |
| 22 | Th |                               |   | 4  |   | 56 |    |    | 25 | 1     | 8    | 22 |    |
| 23 | F  |                               |   | 3  |   | 57 |    |    | 37 | 1     | 25   | 23 |    |
| 24 | S  | 5 S. aft. East. Rog. Sund.    |   | 1  |   | 59 |    |    | 48 | 1     | 37   | 24 |    |
| 25 | S  |                               |   | 0  | 8 | 0  |    |    | 59 | 1     | 49   | 25 |    |
| 26 | M  | Augustine A. B. East. T. 4    | 3 | 59 |   | 1  | 21 | 10 | 2  | 0     |      | 26 |    |
| 27 | Tu | Venerable Bede [Ret.]         |   | 58 |   | 2  |    | 20 | 2  | 12    |      | 27 |    |
| 28 | W  | K. Ch. II. rest. 1660. Ascen. |   | 57 |   | 3  |    | 30 | 2  | 23    |      | 28 |    |
| 29 | Th | [Holy Th.]                    |   | 56 |   | 4  |    | 39 | 2  | 38    |      | 29 |    |
| 30 | F  | Easter T. 5 Ret.              |   | 55 |   | 5  |    | 48 | 2  | 56    |      | 30 |    |
| 31 | S  |                               |   | 54 |   | 6  |    | 57 | Q  | fets  |      | N  |    |

| Days | L. of D. | Day Inc. | D. breaks      | Tw. ends | Sun East | Cl. aft. S. | 7 Stars So. |
|------|----------|----------|----------------|----------|----------|-------------|-------------|
| 1    | 14 46    | 7 2      | 2 7            | 9 55     | 6 50     | 3 8         | 0 a 59      |
| 6    | 15 4     | 20       | 1 52           | 10 10    | 55       | 39          | 40          |
| 11   | 20       | 36       | 30             | 33       | 7 0      | 56          | 21          |
| 16   | 36       | 52       | 7              | 56       | 4        | 0           | 1           |
| 21   | 50       | 8 6      | 0 32           | 11 38    | 8        | 3 50        | 11 m 42     |
| 26   | 16 2     | 18       | No real Night. |          | 12       | 25          | 22          |

First Quarter, 8th, 59 m. past 4 morn.  
 Full Moon, 14th, 27 m. past 12 night.  
 Last Quarter, 21st, 51 m. past 4 aftern.  
 New Moon, 29th, 1 m. past 5 aftern.

Sun enters ♋  
 21 d. 3 h. 12 m.

|    |    |                                     |   |    |   |    |    |    |   |       |   |    |    |
|----|----|-------------------------------------|---|----|---|----|----|----|---|-------|---|----|----|
| 1  | E  | Ascension. <i>Nicomede</i>          | 3 | 53 | 8 | 7  | 22 | n  | 5 | 10    | a | 17 | 2  |
| 2  | M  | Easter Term ends                    |   | 52 |   | 8  |    | 13 |   | 10    |   | 58 | 3  |
| 3  | Tu |                                     |   | 51 |   | 9  |    | 21 |   | 11    |   | 29 | 4  |
| 4  | W  | K. Geo. III. born, 1738             |   | 50 |   | 10 |    | 28 |   | 11    |   | 51 | 5  |
| 5  | Th | Pr. Er. Aug. b. 1771. <i>Bonif.</i> |   | 49 |   | 11 |    | 35 |   | morn  |   |    | 6  |
| 6  | F  | [Orf. T. ends                       |   | 49 |   | 11 |    | 41 |   | 0     |   | 8  | 7  |
| 7  | S  |                                     |   | 48 |   | 12 |    | 47 |   | 0     |   | 23 | 8  |
| 8  | E  | Whit-Sunday                         |   | 47 |   | 13 |    | 53 |   | 0     |   | 34 | 9  |
| 9  | M  |                                     |   | 47 |   | 13 |    | 58 |   | 0     |   | 43 | 10 |
| 10 | Tu | Prs. Amelia born 1711.              |   | 46 |   | 14 | 23 | 3  |   | 0     |   | 55 | 11 |
| 11 | W  | St. Barnabas. Ember Week            |   | 45 |   | 15 |    | 7  |   | 1     |   | 8  | 12 |
| 12 | Th |                                     |   | 45 |   | 15 |    | 11 |   | 1     |   | 23 | 13 |
| 13 | F  |                                     |   | 44 |   | 16 |    | 15 |   | 1     |   | 45 | 14 |
| 14 | S  |                                     |   | 44 |   | 16 |    | 18 |   | 2     |   | 20 | 15 |
| 15 | E  | Trinity Sunday                      |   | 44 |   | 16 |    | 20 |   | rises |   |    | F  |
| 16 | M  | Trinity T. 1st Return               |   | 44 |   | 16 |    | 23 |   | 10    | a | 35 | 17 |
| 17 | Tu | St. Alban                           |   | 43 |   | 17 |    | 25 |   | 11    |   | 5  | 18 |
| 18 | W  | Orf. Term begins                    |   |    |   |    |    | 26 |   | 11    |   | 25 | 19 |
| 19 | Th | Corpus Christi                      |   |    |   |    |    | 27 |   | 11    |   | 40 | 20 |
| 20 | F  | Trin. T. beg. <i>Trans. Edw.</i>    |   |    |   |    |    | 28 |   | 11    |   | 52 | 21 |
| 21 | S  | Longest Day [K.W.S.]                |   |    |   |    |    | 28 |   | morn  |   |    | 22 |
| 22 | E  | Sunday after Trinity                |   |    |   |    |    | 28 |   | 0     |   | 2  | 23 |
| 23 | M  | Trinity T. 2d Return                |   |    |   |    |    | 28 |   | 0     |   | 12 | 24 |
| 24 | Tu | Nativ. of St. John Baptist          |   |    |   |    |    | 27 |   | 0     |   | 23 | 25 |
| 25 | W  |                                     |   | 43 |   | 17 |    | 25 |   | 0     |   | 38 | 26 |
| 26 | Th |                                     |   | 44 |   | 16 |    | 23 |   | 0     |   | 56 | 27 |
| 27 | F  |                                     |   | 44 |   | 16 |    | 21 |   | 1     |   | 20 | 28 |
| 28 | S  |                                     |   | 44 |   | 16 |    | 18 |   | 1     |   | 55 | 29 |
| 29 | E  | S. aft. Trin. St. Peter.            |   | 44 |   | 16 |    | 15 |   | (sets |   |    | N  |
| 30 | M  | Trinity T. 3d Return                |   | 45 |   | 15 |    | 12 |   | 9     | a | 27 | 1  |

Longest Day, at Lond.  
 is 16 h. 34 m. 4 sec.  
 allowing 9 m. 16 sec.  
 for refraction.

| Days | L. of D. | Day Inc. | D. breaks | Tw. ends | Sun East | Cl. aft. S. | 7 Stars So.  |
|------|----------|----------|-----------|----------|----------|-------------|--------------|
| 1    | 16       | 14       | 8         | 30       | 7        | 15          | 2 39 10 m 57 |
| 6    |          | 22       |           | 38       |          | 18          | 1 49 37      |
| 11   |          | 30       |           | 46       |          | 19          | 0 53 17      |
| 16   |          | 32       |           | 48       |          | 20          | obef. 9 58   |
| 21   |          | 34       |           | 50       |          | 21          | 1 13 35      |
| 26   |          | 32       | o dec. 2  |          |          | 20          | 2 17 15      |

No night, but  
 constant day  
 or twilight.

First  
 Full  
 Last  
 New

1 Tu  
 2 W  
 3 Th  
 4 F  
 5 S  
 6 M  
 7 Tu  
 8 W  
 9 Th  
 10 F  
 11 S  
 12 E  
 13 M  
 14 Tu  
 15 W  
 16 Th  
 17 F  
 18 S  
 19 E  
 20 M  
 21 Tu  
 22 W  
 23 Th  
 24 F  
 25 S  
 26 E  
 27 M  
 28 Tu  
 29 W  
 30 Th

Days L.  
 1 16  
 6  
 11  
 16  
 21 15  
 26



First Quarter, 7th, 52 m. past 3 aftern.  
Full Moon, 14th, 56 m. past 6 morn.  
Last Quarter, 21st, 36 m. past 4 morn.  
New Moon, 29th, 55 m. past 7 morn.

Sun enters ♏  
22 d. 14 h. 2 m.

|    |    |                             |    |    |    |    |    |    |         |     |    |    |
|----|----|-----------------------------|----|----|----|----|----|----|---------|-----|----|----|
| 1  | Ru | Cam. Commencement           | 3  | 45 | 8  | 15 | 23 | n  | 8       | 9 a | 50 | 2  |
| 2  | W  | Visitation of the V. Mary   | 46 |    |    | 14 |    |    | 4       | 10  | 9  | 3  |
| 3  | Th | Dog-days begin              | 46 |    |    | 14 | 22 | 59 | 10      | 23  |    | 4  |
| 4  | F  | Transf. of St. Martin. Cam. | 47 |    |    | 13 |    | 54 | 10      | 35  |    | 5  |
| 5  | S  | Old Mids. Day. [T. ends     | 48 |    |    | 12 |    | 49 | 10      | 47  |    | 6  |
| 6  | E  | 3 Sunday after Trinity      | 48 |    |    | 12 |    | 43 | 10      | 55  |    | 7  |
| 7  | M  | Tho. a Becket. Trin. T. 4   | 49 |    |    | 11 |    | 37 | 11      | 6   |    | 8  |
| 8  | Tu | [Ret.                       | 50 |    |    | 10 |    | 30 | 11      | 21  |    | 9  |
| 9  | W  | Trinity Term ends           | 51 |    |    | 9  |    | 23 | 11      | 40  |    | 10 |
| 10 | Th |                             | 51 |    |    | 9  |    | 16 | morn    |     |    | 11 |
| 11 | F  |                             | 52 |    |    | 8  |    | 8  | 0       | 6   |    | 12 |
| 12 | S  | Oxford Ad                   | 53 |    |    | 7  |    | 0  | 0       | 46  |    | 13 |
| 13 | E  | 4 Sunday after Trinity      | 54 |    |    | 6  | 21 | 51 | 1       | 49  |    | 14 |
| 14 | M  |                             | 55 |    |    | 5  |    | 42 | ( rises |     |    | 15 |
| 15 | Tu | Swithin                     | 56 |    |    | 4  |    | 33 | 9 a     | 22  |    | 16 |
| 16 | W  |                             | 58 |    |    | 2  |    | 23 | 9       | 38  |    | 17 |
| 17 | Th |                             | 59 |    |    | 1  |    | 13 | 9       | 51  |    | 18 |
| 18 | F  |                             | 4  | 0  | 0  |    |    | 3  | 10      | 4   |    | 19 |
| 19 | S  | Oxf. Term ends              | 1  | 7  | 59 | 20 |    | 52 | 10      | 15  |    | 20 |
| 20 | E  | 5 S. aft. Trin: Margaret    | 2  |    | 58 |    |    | 41 | 10      | 25  |    | 21 |
| 21 | M  |                             | 4  |    | 56 |    |    | 29 | 10      | 40  |    | 22 |
| 22 | Tu | Mary Magdalen               | 5  |    | 55 |    |    | 18 | 10      | 56  |    | 23 |
| 23 | W  |                             | 6  |    | 54 |    |    | 6  | 11      | 19  |    | 24 |
| 24 | Th |                             | 7  |    | 53 | 19 |    | 53 | 11      | 52  |    | 25 |
| 25 | F  | St. James                   | 9  |    | 51 |    |    | 40 | morn    |     |    | 26 |
| 26 | S  | St. Anne                    | 10 |    | 50 |    |    | 27 | 0       | 36  |    | 27 |
| 27 | E  | 6 Sunday after Trinity      | 12 |    | 48 |    |    | 14 | 1       | 31  |    | 28 |
| 28 | M  |                             | 13 |    | 47 |    |    | 0  | 2       | 37  |    | 29 |
| 29 | Tu |                             | 15 |    | 45 | 18 |    | 46 | ( fers  |     | N  |    |
| 30 | W  |                             | 16 |    | 44 |    |    | 31 | 8 a     | 30  |    | 2  |
| 31 | Th |                             | 8  |    | 42 |    |    | 17 | 8       | 40  |    | 3  |

| So. | Days | L. of D. | Day dec. | L. of G. R. S. | 11 V. ends | Sun East | Cl. bef. S. | 7 Stars So. |
|-----|------|----------|----------|----------------|------------|----------|-------------|-------------|
| 57  | 1    | 16 30    | 0 4      |                |            | 7 19     | 3 18        | 8 m 54      |
| 37  | 6    | 24       | 10       |                |            | 18       | 4 13        | 34          |
| 17  | 11   | 16       | 18       | No real Night. |            | 15       | 4 59        | 13          |
| 58  | 16   | 4        | 30       |                |            | 13       | 5 33        | 7 53        |
| 35  | 21   | 15 52    | 42       |                |            | 9        | 5 55        | 33          |
| 15  | 26   | 40       | 54       | 0 44           | 11 13      | 5        | 6 3         | 13          |

No real Night.

First Quarter, 5th, 6 m. past 12 night.

Full Moon, 12th, 17 m. past 2 aftern.

Last Quarter, 19th, 19 m. past 7 even.

New Moon, 27th, 33 m. past 10 night.

Sun enters ♍  
22 d. 20 h. 21 m.

|    |    |                                   |   |    |   |    |    |   |    |    |        |    |    |
|----|----|-----------------------------------|---|----|---|----|----|---|----|----|--------|----|----|
| 1  | F  | Lammas                            | 4 | 19 | 7 | 41 | 18 | n | 2  | 8  | a      | 50 | 4  |
| 2  | S  |                                   |   | 21 |   | 39 | 17 |   | 46 | 9  |        | 1  | 5  |
| 3  | M  | 7 Sunday after Trinity            |   | 22 |   | 38 |    |   | 31 | 9  |        | 14 | 6  |
| 4  | Tu |                                   |   | 24 |   | 36 |    |   | 15 | 9  |        | 26 | 7  |
| 5  | W  |                                   |   | 26 |   | 34 | 16 |   | 59 | 9  |        | 40 | 8  |
| 6  | Th | Transfiguration                   |   | 27 |   | 33 |    |   | 42 | 10 |        | 3  | 9  |
| 7  | F  | Name of Jesus                     |   | 29 |   | 31 |    |   | 26 | 10 |        | 39 | 10 |
| 8  | S  |                                   |   | 31 |   | 29 |    |   | 9  | 11 |        | 29 | 11 |
| 9  | M  |                                   |   | 32 |   | 28 | 15 |   | 51 |    | morn   |    | 12 |
| 10 | Tu | 8 S. aft. Trinity - Lawrence      |   | 34 |   | 26 |    |   | 34 | 0  |        | 42 | 13 |
| 11 | W  | Prs. Bruff, b. 1737. Dog Days end |   | 36 |   | 24 |    |   | 10 | 2  |        | 14 | 14 |
| 12 | Th | Pr. Wales. bo. 1762. Old          |   | 37 |   | 23 | 14 |   | 58 |    | Griles |    | F  |
| 13 | F  | [Lam. Day                         |   | 39 |   | 21 |    |   | 40 | 7  | a      | 58 | 15 |
| 14 | S  |                                   |   | 41 |   | 19 |    |   | 22 | 8  |        | 12 | 17 |
| 15 | M  | Pr. Fred. born 1763               |   | 43 |   | 17 |    |   | 3  | 8  |        | 23 | 18 |
| 16 | Tu | 9 Sunday after Trinity            |   | 45 |   | 15 | 13 |   | 44 | 8  |        | 33 | 19 |
| 17 | W  |                                   |   | 46 |   | 14 |    |   | 25 | 8  |        | 48 | 20 |
| 18 | Th |                                   |   | 48 |   | 12 |    |   | 6  | 9  |        | 4  | 21 |
| 19 | F  |                                   |   | 50 |   | 10 | 12 |   | 4  | 9  |        | 24 | 22 |
| 20 | S  |                                   |   | 52 |   | 8  |    |   | 2  | 9  |        | 51 | 23 |
| 21 | M  | Pr. Wm. Henry bo. 1765            |   | 54 |   | 6  |    |   | 7  | 10 |        | 30 | 24 |
| 22 | Tu |                                   |   | 55 |   | 5  | 11 |   | 46 | 11 |        | 26 | 25 |
| 23 | W  |                                   |   | 57 |   | 3  |    |   | 26 |    | morn   |    | 26 |
| 24 | Th | St. Barthol. 10 S. aft. Trin      |   | 59 |   | 1  |    |   | 6  | 0  |        | 30 | 27 |
| 25 | F  |                                   | 5 | 1  | 5 | 59 | 10 |   | 45 | 1  |        | 40 | 28 |
| 26 | S  |                                   |   | 3  |   | 57 |    |   | 24 | 2  |        | 54 | 29 |
| 27 | M  |                                   |   | 5  |   | 55 |    |   | 3  |    | fets   |    | N  |
| 28 | Tu | St. Augustine                     |   | 7  |   | 53 | 9  |   | 42 | 7  | a      | 5  | 1  |
| 29 | W  | J. Bapt. beheaded                 |   | 9  |   | 51 |    |   | 21 | 7  |        | 17 | 2  |
| 30 | Th |                                   |   | 10 |   | 50 | 8  |   | 59 | 7  |        | 26 | 3  |
| 31 | F  | 11 Sunday after Trinity           |   | 12 |   | 48 |    |   | 37 | 7  |        | 37 | 4  |

| Days | L. of D. | Day dec. | D. breaks | Tw. ends | Sun East | Cl. def. S. | 7 Stars So. |
|------|----------|----------|-----------|----------|----------|-------------|-------------|
| 1    | 15 22    | 1 12     | 1 22      | 10 35    | 7 0      | 5 54        | 6 m 49      |
| 6    | 6        | 28       | 42        | 15       | 6 54     | 5 29        | 30          |
| 11   | 14 48    | 46       | 2 0       | 9 57     | 50       | 4 50        | 11          |
| 16   | 30       | 2 4      | 18        | 40       | 45       | 3 56        | 5 52        |
| 21   | 12       | 22       | 33        | 25       | 39       | 2 49        | 33          |
| 26   | 13 54    | 40       | 48        | 10       | 34       | 1 32        | 15          |

First Quarter, 4th, 37 m. past 6 morn.

Full Moon, 10th, 36 m. past 11 night.

Last Quarter, 18th, 54 m. past 12 noon.

New Moon, 26th, 26 m. past 12 noon.

Sun enters ♈

22d. 16 h. 49 m.

|    |    |                              |    |    |   |    |     |    |         |    |    |
|----|----|------------------------------|----|----|---|----|-----|----|---------|----|----|
| 1  | M  | Giles                        | 5  | 14 | 6 | 46 | 8   | 16 | 7       | 53 | 5  |
| 2  | Tu | London burnt, 1666           |    | 16 |   | 44 | 7   | 54 | 8       | 15 | 6  |
| 3  | W  |                              |    | 18 |   | 42 |     | 32 | 8       | 42 | 7  |
| 4  | Th |                              |    | 20 |   | 40 |     | 10 | 9       | 26 | 8  |
| 5  | F  |                              |    | 22 |   | 38 | 6   | 47 | 10      | 31 | 9  |
| 6  | S  |                              |    | 24 |   | 36 |     | 25 | 11      | 53 | 10 |
| 7  | E  | 12 S. aft. Trin. Enurchus    |    | 26 |   | 34 |     | 2  | morn    |    | 11 |
| 8  | M  | Nativity of the V. Mary      |    | 28 |   | 32 | 5   | 40 | 1       | 24 | 12 |
| 9  | Tu |                              |    | 30 |   | 30 |     | 17 | 2       | 57 | 13 |
| 10 | W  | Moon eclipsed, visible       |    | 32 |   | 28 | 4   | 54 | 4       | 30 | F  |
| 11 | Th |                              |    | 34 |   | 26 |     | 32 | ☾ rises |    | 15 |
| 12 | F  |                              |    | 35 |   | 25 |     | 9  | 6 a 50  |    | 16 |
| 13 | S  |                              |    | 37 |   | 23 | 3   | 46 | 7       | 2  | 17 |
| 14 | E  | 13 S. aft. Trin. Holy-Cross  |    | 39 |   | 21 |     | 23 | 7       | 16 | 18 |
| 15 | M  |                              |    | 41 |   | 19 |     | 0  | 7       | 35 | 19 |
| 16 | Tu |                              |    | 43 |   | 17 | 2   | 36 | 7       | 58 | 20 |
| 17 | W  | Ember Week, Lambert          |    | 45 |   | 15 |     | 13 | 8       | 36 | 21 |
| 18 | Th |                              |    | 47 |   | 13 | 1   | 50 | 9       | 22 | 22 |
| 19 | F  |                              |    | 49 |   | 11 |     | 27 | 10      | 22 | 23 |
| 20 | S  |                              |    | 51 |   | 9  |     | 3  | 11      | 34 | 24 |
| 21 | E  | 14 S. aft. Trin. St. Matthew |    | 53 |   | 7  | 0   | 40 | morn    |    | 25 |
| 22 | M  | K. Geo. III. cor. 1761.      |    | 55 |   | 5  |     | 16 | 0       | 48 | 26 |
| 23 | Tu |                              |    | 57 |   | 3  | 0 s | 7  | 2       | 4  | 27 |
| 24 | W  |                              |    | 59 |   | 1  |     | 31 | 3       | 20 | 28 |
| 25 | Th |                              | 6  | 1  | 5 | 59 |     | 54 | 4       | 35 | 29 |
| 26 | F  | St. Cyprian. Sun eclipsed,   |    | 3  |   | 57 | 1   | 17 | ☾ sets  |    | N  |
| 27 | S  | [invisible]                  |    | 5  |   | 55 |     | 41 | 5       | 58 | 2  |
| 28 | E  | 15 Sunday after Trinity      |    | 7  |   | 53 | 2   | 4  | 6       | 12 | 3  |
| 29 | M  | St. Michael. Prs. Ch. Aug.   |    | 9  |   | 51 |     | 28 | 6       | 30 | 4  |
| 30 | Tu | St. Jerome [Mat. b. 1766]    | 11 |    |   | 49 |     | 51 | 6       | 54 | 5  |

| Days | L. of D. | Day dec. | D. breaks | Tw. ends | Sun East | Cl. aft. S. | 7 Stars So.       |
|------|----------|----------|-----------|----------|----------|-------------|-------------------|
| 1    | 13 32    | 3 2      | 3 5       | 8 54     | 6 27     | 0 14        | 4 <sup>m</sup> 53 |
| 6    | 12       | 22       | 19        | 40       | 21       | 1 50        | 35                |
| 11   | 12 52    | 42       | 32        | 27       | 14       | 3 33        | 17                |
| 16   | 34       | 4 0      | 43        | 16       | 8        | 5 18        | 3 59              |
| 21   | 14       | 20       | 54        | 5        | 2        | 7 2         | 42                |
| 26   | 11 54    | 40       | 4 5       | 7 54     | 5 56     | 8 45        | 24                |

First Quarter, 3d, 39 m. past 12 noon.

Full Moon, 10th, 26 m. past 11 morn.

Last Quarter, 18th, 37 m. past 8 morn.

New Moon, 26th, 9 m. past 1 morn.

Sun enters m.

23 d. 0 h. 42 m.

|    |    |                           |   |    |   |    |                   |    |       |      |    |
|----|----|---------------------------|---|----|---|----|-------------------|----|-------|------|----|
| 1  | W  | Remigius                  | 6 | 13 | 5 | 47 | 3 <sup>s</sup> 14 | 7  | a     | 36   | 6  |
| 2  | Th |                           |   | 15 |   | 45 | 38                | 8  |       | 32   | 7  |
| 3  | F  |                           |   | 17 |   | 43 | 4                 | 1  | 9     | 48   | 8  |
| 4  | S  |                           |   | 19 |   | 41 | 24                | 11 | 15    |      | 9  |
| 5  | S  | 16 Sunday after Trinity   |   | 21 |   | 39 | 48                |    | morn  |      | 10 |
| 6  | M  | Faith                     |   | 23 |   | 37 | 5                 | 11 | 0     | 42   | 11 |
| 7  | Tu |                           |   | 25 |   | 35 | 34                | 2  | 12    |      | 12 |
| 8  | W  |                           |   | 27 |   | 33 | 57                | 3  | 26    |      | 13 |
| 9  | Th | St. Denys                 |   | 28 |   | 32 | 6                 | 20 | 5     | 2    | 14 |
| 10 | F  | Off. & Lam. T. beg. Old   |   | 30 |   | 30 | 42                |    | rises |      | F  |
| 11 | S  | [Mic. Day                 |   | 32 |   | 28 | 7                 | 5  | 5     | a    | 30 |
| 12 | S  | 17 Sunday after Trinity   |   | 34 |   | 26 | 28                | 5  | 48    |      | 17 |
| 13 | M  | Trans. of K. Edw. Conf.   |   | 36 |   | 24 | 50                | 6  | 10    |      | 18 |
| 14 | Tu |                           |   | 38 |   | 22 | 8                 | 13 | 6     | 40   | 19 |
| 15 | W  |                           |   | 40 |   | 20 | 35                | 7  | 22    |      | 20 |
| 16 | Th |                           |   | 42 |   | 18 | 57                | 8  | 18    |      | 21 |
| 17 | F  | Egheledred                |   | 44 |   | 16 | 9                 | 19 | 9     | 22   | 22 |
| 18 | S  | St. Luke                  |   | 46 |   | 14 | 41                | 10 | 36    |      | 23 |
| 19 | S  | 18 Sunday after Trinity   |   | 48 |   | 12 | 10                | 3  | 11    | 52   | 24 |
| 20 | M  |                           |   | 50 |   | 10 | 25                |    | morn  |      | 25 |
| 21 | Tu |                           |   | 52 |   | 8  | 46                | 1  | 8     |      | 26 |
| 22 | W  |                           |   | 54 |   | 6  | 11                | 7  | 2     | 22   | 27 |
| 23 | Th |                           |   | 55 |   | 5  | 29                | 3  | 38    |      | 28 |
| 24 | F  |                           |   | 57 |   | 3  | 50                | 3  | 56    |      | 29 |
| 25 | S  | K. Geo. III. Acc. Crispin |   | 59 |   | 1  | 12                | 10 | 4     | 15   | 30 |
| 26 | S  | 19 Sunday after Trinity   |   | 7  |   | 14 | 59                | 31 |       | fets | N  |
| 27 | M  | [1760                     |   | 3  |   | 57 | 51                | 5  | a     | 4    | 2  |
| 28 | Tu | S. Simon and St. Jude     |   | 5  |   | 55 | 13                | 12 | 5     | 38   | 3  |
| 29 | W  |                           |   | 7  |   | 53 | 32                | 6  | 30    |      | 4  |
| 30 | Th |                           |   | 9  |   | 51 | 52                | 7  | 40    |      | 5  |
| 31 | F  |                           |   | 10 |   | 50 | 14                | 11 | 9     | 6    | 6  |

| Days | L. of D. | Day dec. | D. breaks | Tw. ends | Sun. East | Cl. aft. S. | 7 Stars So |
|------|----------|----------|-----------|----------|-----------|-------------|------------|
| 1    | 11 34    | 5 0      | 4 17      | 7 42     | 5 50      | 10 22       | 3 m 6      |
| 6    | 14       | 20       | 28        | 31       | 44        | 11 52       | 2 48       |
| 11   | 10 56    | 38       | 38        | 21       | 37        | 13 14       | 29         |
| 16   | 36       | 58       | 48        | 11       | 31        | 14 22       | 10         |
| 21   | 16       | 6 18     | 57        | 2        | 25        | 15 16       | 1 52       |
| 26   | 9 58     | 36       | 5 6       | 6 53     | 19        | 15 53       | 31         |



First Quarter, 1st, 26 m. past 7 night.  
 Full Moon, 9th, 1 m. past 2 morn.  
 Last Quarter, 17th, 1 m. past 5 morn.  
 New Moon, 24th, 40 m. past 12 noon.

Sun enters ♄  
 21 d. 20 h. 53 m.

|    |    |                              |   |    |   |    |    |    |         |      |    |
|----|----|------------------------------|---|----|---|----|----|----|---------|------|----|
| 1  | S  | All Saints [1767 All Souls]  | 7 | 12 | 4 | 48 | 14 | 30 | 10      | 35   | 7  |
| 2  | E  | 20 S. aft. Trin. Pr. Edw. b. |   | 14 |   | 46 |    | 50 | morn    |      | 8  |
| 3  | M  | Prs. Soph. b. 1777. Mic. T.  |   | 16 |   | 44 | 15 | 8  | 0       | 4    | 9  |
| 4  | Tu | [1 Ret.                      |   | 18 |   | 42 |    | 27 | 1       | 28   | 10 |
| 5  | W  | Powder Plot 1605             |   | 19 |   | 41 |    | 45 | 2       | 50   | 11 |
| 6  | Th | Mich. Term beg. Leonard      |   | 21 |   | 39 | 16 | 4  | 4       | 8    | 12 |
| 7  | F  | Duke of Camb. b. 1745        |   | 23 |   | 37 |    | 21 | 5       | 26   | 13 |
| 8  | S  | Prs. Aug. Soph. b. 1768      |   | 24 |   | 36 |    | 39 | 6       | 46   | 14 |
| 9  | E  | 21 S. af. Tr. Ld. Mayor's D. |   | 26 |   | 34 |    | 56 | ☾ rises |      | F  |
| 10 | M  | [at Lond.                    |   | 28 |   | 32 | 17 | 13 | 4       | a 40 | 16 |
| 11 | Tu | St. Martin                   |   | 30 |   | 30 |    | 30 | 5       | 20   | 17 |
| 12 | W  | Mich. Term, 2 Return         |   | 31 |   | 29 |    | 46 | 6       | 10   | 18 |
| 13 | Th | Britius                      |   | 33 |   | 27 | 18 | 2  | 7       | 12   | 19 |
| 14 | F  |                              |   | 34 |   | 26 |    | 18 | 8       | 20   | 20 |
| 15 | S  | Machutus                     |   | 36 |   | 24 |    | 34 | 9       | 35   | 21 |
| 16 | E  | 22 Sunday after Trinity      |   | 37 |   | 23 |    | 49 | 10      | 48   | 22 |
| 17 | M  | Hugh                         |   | 39 |   | 21 | 19 | 4  | morn    |      | 23 |
| 18 | Tu | Mich. Term, 3d Return        |   | 40 |   | 20 |    | 18 | 0       | 2    | 24 |
| 19 | W  |                              |   | 42 |   | 18 |    | 32 | 1       | 15   | 25 |
| 20 | Th | Edmund, K. & M.              |   | 43 |   | 17 |    | 46 | 2       | 30   | 26 |
| 21 | F  |                              |   | 45 |   | 15 |    | 59 | 3       | 46   | 27 |
| 22 | S  | Cecilia. Old Mart. Day       |   | 46 |   | 14 | 20 | 12 | 5       | 10   | 28 |
| 23 | E  | 23 S. after Trin. Clement    |   | 47 |   | 13 |    | 25 | 6       | 45   | 29 |
| 24 | M  |                              |   | 49 |   | 11 |    | 37 | ☾ sets  |      | N  |
| 25 | Tu | D. Glof. b. 1743 Catharine   |   | 50 |   | 10 |    | 49 | 4       | a 15 | 2  |
| 26 | W  | [Mich. T. 4 Ret.             |   | 51 |   | 9  | 21 | 1  | 5       | 22   | 3  |
| 27 | Th |                              |   | 52 |   | 8  |    | 12 | 6       | 43   | 4  |
| 28 | F  | Michaelmas Term ends         |   | 54 |   | 6  |    | 22 | 8       | 14   | 5  |
| 29 | S  |                              |   | 55 |   | 5  |    | 33 | 9       | 43   | 6  |
| 30 | E  | Advent Sund. St. Andrew      |   | 56 |   | 4  |    | 43 | 11      | 10   | 7  |

| Days | L. of D. | Day dec. | D. breaks | Tw. ends | Sun East | Cl. aft. S. | 7 Stars So    |
|------|----------|----------|-----------|----------|----------|-------------|---------------|
| 1    | 9        | 36       | 6 58      | 5 15     | 6 44     | 5 13        | 16 14 1 m 10  |
| 6    |          | 18       | 7 16      | 22       | 37       | 7           | 16 9 0 50     |
| 11   |          | 0        | 34        | 29       | 30       | 2           | 15 44 30      |
| 16   | 8        | 46       | 48        | 35       | 24       | 4 57        | 14 57 9       |
| 21   |          | 30       | 8 4       | 42       | 18       | 53          | 13 49 11 a 44 |
| 26   |          | 18       | 16        | 48       | 12       | 49          | 12 21 23      |

First Quarter, 1st, 7 m. past 4 morn.  
 Full Moon, 8th, 2 m. past 7 night.  
 Last Quarter, 16th, 15 m. past 12 night.  
 New Moon, 23d, 21 m. past 11 night.  
 First Quarter, 30th, 29 m. past 3 aftern.

Sun enters ♋  
 21 d. 9 h. 13 m.

|    |    |                                |                                                                            |    |   |    |    |    |         |    |    |
|----|----|--------------------------------|----------------------------------------------------------------------------|----|---|----|----|----|---------|----|----|
| 1  | M  |                                | 7                                                                          | 57 | 4 | 3  | 21 | 52 | morn    | 8  |    |
| 2  | Tu |                                |                                                                            | 58 |   | 2  | 22 | 1  | 0       | 32 | 9  |
| 3  | W  |                                |                                                                            | 59 |   | 1  |    | 10 | 1       | 52 | 10 |
| 4  | Th |                                | 8                                                                          | 0  |   | 0  |    | 18 | 3       | 10 | 11 |
| 5  | F  |                                |                                                                            | 1  | 3 | 59 |    | 26 | 4       | 28 | 12 |
| 6  | S  | Nicholas                       |                                                                            | 2  |   | 58 |    | 33 | 5       | 45 | 13 |
| 7  | E  | 2 Sunday in Advent             |                                                                            | 2  |   | 58 |    | 40 | 7       | 2  | 14 |
| 8  | M  | Conception of V. M.            |                                                                            | 3  |   | 57 |    | 46 | ( rises | F  |    |
| 9  | Tu |                                |                                                                            | 4  |   | 56 |    | 52 | 3 a     | 55 | 16 |
| 10 | W  |                                |                                                                            | 4  |   | 56 |    | 58 | 4       | 52 | 17 |
| 11 | Th |                                |                                                                            | 5  |   | 55 | 23 | 3  | 5       | 58 | 18 |
| 12 | F  |                                |                                                                            | 5  |   | 55 |    | 7  | 7       | 8  | 19 |
| 13 | S  | Lucy                           |                                                                            | 6  |   | 54 |    | 12 | 8       | 22 | 20 |
| 14 | E  | 3 Sunday in Advent             |                                                                            | 6  |   | 54 |    | 15 | 9       | 36 | 21 |
| 15 | M  |                                |                                                                            | 7  |   | 53 |    | 19 | 10      | 48 | 22 |
| 16 | Tu | O Sapientia. Cam. T. ends      |                                                                            | 7  |   | 53 |    | 21 | 11      | 58 | 23 |
| 17 | W  | Ember Week Off. T. ends        |                                                                            | 7  |   | 53 |    | 24 | morn    |    | 24 |
| 18 | Th |                                |                                                                            | 8  |   | 52 |    | 25 | 1       | 15 | 25 |
| 19 | F  |                                |                                                                            |    |   |    |    | 27 | 2       | 32 | 26 |
| 20 | S  |                                |                                                                            |    |   |    |    | 28 | 3       | 55 | 27 |
| 21 | E  | 4 S. in Adv. St. Tho. Shortest | Shortest Day at Lond. is 7 h. 44 m. 17 f. allowing 9m. 5f. for refraction. |    |   |    |    | 28 | 5       | 23 | 28 |
| 22 | M  | (Day                           |                                                                            |    |   |    |    | 28 | 6       | 52 | 29 |
| 23 | Tu |                                |                                                                            |    |   |    |    | 28 | ( sets  | N  |    |
| 24 | W  |                                |                                                                            |    |   |    |    | 27 | 4 a     | 0  | 1  |
| 25 | Th | Christmas Day                  |                                                                            | 8  |   | 52 |    | 25 | 5       | 32 | 2  |
| 26 | F  | St. Stephen                    |                                                                            | 7  |   | 53 |    | 23 | 7       | 6  | 3  |
| 27 | S  | St. John                       |                                                                            | 7  |   | 53 |    | 21 | 8       | 38 | 4  |
| 28 | E  | 1 S. aft. Christ. Innocent     |                                                                            | 7  |   | 53 |    | 18 | 10      | 4  | 5  |
| 29 | M  |                                |                                                                            | 6  |   | 54 |    | 15 | 11      | 22 | 6  |
| 30 | Tu |                                |                                                                            | 6  |   | 54 |    | 11 | morn    |    | 7  |
| 31 | W  | Silvester                      |                                                                            | 5  |   | 55 |    | 6  | 1       | 38 | 8. |

| Days | L. of D. | Day dec. | D. breaks | Tw. ends | Sun East | Cl. aft. S. | 7 Stars So |
|------|----------|----------|-----------|----------|----------|-------------|------------|
| 1    | 8 6      | 8 28     | 5 54      | 6 6      | 4 46     | 10 35       | 11 a 2     |
| 6    | 7 56     | 38       | 57        | 3        | 43       | 8 33        | 10 40      |
| 11   | 50       | 44       | 58        | 2        | 41       | 6 19        | 18         |
| 16   | 46       | 48       | 59        | 1        | 40       | 3 55        | 9 56       |
| 21   | 44       | 50       | 6 0       | 0        | 39       | 1 26        | 34         |
| 26   | 46       | inc. 2   | 5 59      | 1        | 40       | 1 bef. 5    | 12         |

CHRONOLOGICAL NOTES, &c. in 1783.

|                  |   |   |    |   |                |   |          |
|------------------|---|---|----|---|----------------|---|----------|
| Demical Letter   | - | - | -  | E | Shrove-Tuesday | - | March 4. |
| Golden Number    | - | - | 17 |   | Easter Day     | - | Apr. 20. |
| Epact            | - | - | 26 |   | Whit-Sunday    | - | June 8.  |
| Cycle of the Sun | - | - | 28 |   | Trinity-Sunday | - | June 15. |
| Roman Indiction  | - | - | 1  |   | Advent-Sunday  | - | Nov. 30. |

ECLIPSES, &c.

THERE happen 6 eclipses this year, viz. 4 of the sun, and 2 of the moon; of which those of the moon only will be visible here.—

I. The sun eclipsed March 3d, at a quarter past 7 in the morning, invisible.—II. The moon is eclipsed, visible, March 18th, in the evening; begins 31 m. past 7; beginning of total darkness 8 h. 32 m.; end of total darkness 10 h. 14 m.; end of the eclipse a quarter past 11; digits eclipsed 21d. 27m.—III. The sun eclipsed April 1st, at 50 m. past 8 evening, invisible.—IV. Sun eclipsed August 27th, at half past 10 at night, invisible.—V. Moon eclipsed, visible, September the 10th, at night; eclipse begins 9h. 44 m.; beginning of total darkness 10 h. 44 m.; end of total darkness 12 h. 26 m.; end of the eclipse 25 m. past 1 next morning; digits eclipsed 21d. 20m.—VI. Sun eclipsed September 26th, at 26 m. past noon, invisible.

VENUS is an even. star from Jan. 4 to Oct. 22; and then a morn. star to the end.

JUPITER is a morn. star to July 20; and then an even. star to the year's end.

ANSWERS to the ENIGMAS.

|              |              |            |              |
|--------------|--------------|------------|--------------|
| 1. Oven.     | 4. Time.     | 7. Tear.   | 10. Enigma.  |
| 2. Gardener. | 5. Haystack. | 8. Period. | 11. Thimble. |
| 3. Grapes.   | 6. Ladder.   | 9. Heart.  | Pr. Pen.     |

The Prize Enigma answered by Mr. Morris Applin.  
To Mrs. Diaria, senior.

Though ancient, dear madam, you're certainly grown,  
You still have perfections, I readily own:  
As soft flowing numbers, the mind to engage;  
And wit that may equal, nay puzzle the sage.  
Though many your rivals, yet all you excel;  
And 'mongst the judicious you still bear the bell:  
'Twere needless, indeed, to relate your renown,  
As you're ardently courted in country and town;  
And though in your train you have many smart fellows,  
If of any, of Dr. Conundrum I'm jealous;  
Though I swear my esteem is as ardent as ever,  
Yet I fear the old fly-boots is much in your favour:  
He is witty, I own, and his converse might please,  
But still I've a claim that is prior to his:  
Remember, good madam, when more in your prime,  
How I constantly paid my addresses in rhyme;  
You as gladly receiv'd them, and shew'd me respect;  
Then be not unkind, nor your old friend neglect:  
But cherish my hopes, and our friendship renew,  
Or I'll lay by my PEN, and must bid you adieu.

Mr.





## Mr. R. Richardson's Address to his PEN.

Thou pleasing, pliant, useful tool,  
That mak'st a wise man, or a fool!  
As fancy leads, 'tis thine to spread  
The laurel round the poet's head:  
"By flow'ry grove or purling stream,"  
Wrapt in enthusiastic dream;

While airy fiction hovers round,  
And midnight fairies trip the ground,  
'Tis thine—'tis thine to speak his  
fame,  
And crown with bays his deathless  
name.

## Mrs. Rubwell's Address to Dr. Conundrum.

A garland of willows much better adorns  
Your brows, you must own, than a large pair of horns;  
For Peggy's forsook you, 'tis certainly so,  
I hinted it to you a twelvemonth ago:  
Though your good friend, the Editor, says she's still kind,  
(He had much better tell us the Doctor is blind)  
Makes twenty excuses, she's sick, or she's dead—  
How could such strange notions e'er enter his head?  
Not put PEN to paper for two whole long years!  
The reason to me quite obvious appears:  
It was riches, good Doctor, that she had in view,  
Or she'd never have left a fond lover like you.  
Yet still you go on in pursuit of the fair:  
You might as well hope to catch feathers in air.  
For me, I could doat on so constant a swain,  
Tho' not one single hair on his head should remain.  
Though you say you've no bags full of silver or gold,  
Shou'd have not even dreamt of your being too old.—  
Till you've took my advice, and learnt to forget her,  
Of the name that I promis'd, not one single letter.

## Mrs. Blanch Lean thus answers the same.

In love's soft epistles the PEN of a  
sage  
Has been used for many a year;  
And Diaria bare witness in many a  
page  
That his love it was true and sincere.

But while each Diarian did fondly  
expect  
A summons to the glad nuptial feast,  
The nymph her dear Lady Di did neg-  
lect,  
And the swain turn'd his love to a jest.

## Mr. John Knowles's Caution to Dr. Conundrum.

My worthy friend Co, the asperser I've read,  
That of Miss Peggy Lugg has so lately been spread.  
But be not too hasty to censure the maid,  
Since mayhap 'tis a scheme that her rival has laid:  
As she's publicly said that Miss Peggy's not true,  
Who knows but she's privately said so by you?  
So far might those arts on your charmer prevail,  
That attention no longer she'll pay to your tale;  
But, quite overwhelmed with sorrow and care,  
Bid adieu to her PEN in a fit of despair.

## The same by Mrs. B. of Salisbury.

Woolston, in pleasing strain, has sung to men,  
The grateful praises of an useful PEN.

The PRIZE ENIGMA answered by Sylvia.

Were Sylvia's muse like Woolston's form'd to please,  
And could she verses write with equal ease,  
Her PEN should cheer the dull, the gloomy hour,  
And then defy e'en love's despotic power.

The same answered by Rusticus.

Long time I have, the prize t' obtain, | Resume it now in hopes to find [kind.  
Each year employ'd my PEN in vain : | Fortune at length may prove more

The same by the Highland Laddie.

Gude troth, now, I've ta'en up my PEN here to tell ye,  
Your riddles are sonsy, and oft unco queer,  
And here's my leal hand on't I'll mak ane amang ye ;  
Sae send me the prize, gin it suit ye, neist year.

The same by Miss Sarah Walker.

When fond love my bosom seizes, | There to tell the fanning breezes  
Pensive o'er the meads I rove ; | What a thing it is to love.

The same by Miss Eliz. Anderson of Queen Square, Bloomsbury.

Tho' a whisper, dear ladies, last year in disguise,  
Perhaps might deceive us in hopes of a prize :  
Whilst our wit we display by the means of our PEN,  
No doubt but in time we may outvie the men.

Separate and ingenious answers were also given by Messrs. Allison, Almond, Amintor, Anderson, Asbill, Miss A. Atkinson, A. B. W. B., Miss Grace Barrett, Bayley, Bate, Baxter, Beckett, Miss Sarah Blackneck, Miss Diana Browne, J. Brown, T. Browne, Cade, Clarissa, Cleypole, Coke and Lyttleton, Miss Eliz. Cooke, Creep-mouse, I. D., D. Dalton, S. Dalton, Debiana, Dening, Dixon, Dring, Fairbank, Fletcher, Florella, Miss E. G. Gibson, Gruby, Gumley, A. H., I. H. Miss H., Hall, Hartley, Hebe, Herod, Jack o'tb' Green, Jackson, Juvenis, Keith, Knapp, Leonora, Lodge, Lorenzo, R. M., Marks, Marsh, May, Metcalfe, Morley, Morris, Needham, Neefton, Nicolson, Oliver, Parthenia, Penn, Philadelphia, Philodaria, P. R. Rainbott, Rehfur, Ross, Rowe, Simpkin, Miss Betty Smale, Smith, Stafford, Mrs. Aniel Stanhope, Swalefield, Swift, Telemachus, Poor Tom, Trelease, Truswell, Tyro, Upton, Vice, Miss Sarah Walker, Kit Went, Welbourn, Westcott, Willet, Williams, and Y. Z.

A General Answer to the Enigmas by Mr. Tho. Woolston.

|                                       |                                      |             |                |                                      |
|---------------------------------------|--------------------------------------|-------------|----------------|--------------------------------------|
| 1 Ye gilded hopes, of flow'ry visions | born,                                | [ye stray ? | yielding lyre, | [strung ;                            |
| Ah ! whither are ye fled ? where can  | Inconstant ? say why leave me thus   | forlorn,    | [day ?         | on fire ;                            |
| In pensive sighs to waste the gloomy  | 2. By you and fancy led, thro' yon-  | der groves  | [shades,       | 4. ' Pleasure ! henceforth with thee |
| I wander'd oft, and blest the cooling | That seem'd the happy haunts of gen- | tle loves,  | [the glades.   | love,                                |
| While sweetest music echo'd down      |                                      |             |                | Where zephyrs softly fan the blow-   |

5. 'Enigmatists in mystic verse may tell  
[*thimbles too* ;  
'Of *ovens*, *gard'ners*, *grapes*, and  
'On *bayricks*, *ladders*, *tears*, and *hearts*  
may dwell ; [clear in view.  
'But *pens* and *time* shall set them  
6. 'But hence ye bards, your quaintly  
formal strain, [can please ;  
'And labour'd *periods* now no more  
'In sylvan shades I woo the tuneful  
train, [at ease,  
'There sweeter music sets my soul  
7. 'Pierian sisters hail !—O now in-  
cline, [bow'rs,  
'Whilst I repose in sweet sequester'd  
'There whisper to my dreams in  
strains divine, [fading flow'rs.  
'And strew life's paths with never  
8. As all at ease beneath the shade  
I lay, [sung.  
By fancy wild enchanted, thus I  
Soon thro' the grove the zephyrs  
ceas'd to play,  
And in my ravish'd ear these ac-  
cents rung :
9. 'Lo, at thy call obsequious, now  
I come ; [scene enjoy ;  
'Rise, gentle swain, each pleasing  
'No more unblest repining need'st  
thou roam, [employ.  
'But let my raptures all thy mind  
10. 'The mountain, flow'ry lawn,  
and verdant field, [that gently roll,  
'The woodland wild, and streams  
'Fraught with unnumber'd charms,  
such joys can yield, [the soul.  
'As cheer the heart and harmonize  
11. 'Go favour'd youth, her beauties  
all explore, [ling lyre ;  
'To all her charms attune the warb-  
'The nymphs shall then unveil their  
sacred lore, [v'nly fire.  
'And animate the strings with hea-  
12. Here ceas'd the melting strain—  
my heart approv'd,  
Whilst on the mental sight bright  
prospects beam ;  
Blest in the pleasing vision long I  
rov'd, [dream.  
But care and winter blasts the flow'ry

## The same by Miss Diana Browne of Honiton.

- May I with trembling *pen* attempt  
The riddles all to name :  
Why then an *oven* is the first,  
Your *heart* must own the same.  
My silver *thimble* next comes out,  
Then *grapes* do soon appear ;
- A *ladder* will the 6th make out,  
The 7th a falling *tear*.  
Still fleeting *time* brings one in view,  
A *gard'ner* shews another ;  
A *bay-stack* if I don't mistake,  
And *period* (.) the other.

## The Vicissitude of Fortune, by Mr. Geo. West.

- Of Strephon the swain once how happy the state,  
His house stor'd with plenty, and large his estate ;  
With roast, *bak'd*, and boil'd his table was stor'd,  
And GRAPES of rich flavour his *gardens* afford ;  
His meads did with grass and sweet HAYRICKS abound,  
And his corn-fields with wheat, oats, and barley were crown'd ;  
His friends were all welcome ; the poor had their part,  
And their wants he reliev'd with benevolent HEART. —  
But delusive is fortune, and riches decay,  
As sunshine and clouds oft bechequer the day :  
Of his former good fortune behold the reverse ;  
Here faulsters my PEN, and grows languid my verse :  
My muse, quite distress'd at poor Strephon's despair,  
Now makes a FULL-STOP.—Now lets fall the big TEAR !  
His income, by losses and lawsuits impair'd,  
Not a THIMBLE-ful now, where full bowls erst appear'd :  
The humble thatch'd cottage now shelters his head,  
And he mounts by a LADDER to seek his hard bed.

Sylvia's Answer to the Enigmas.

When gloomy scenes the mind invade,  
And nature wears a mournful shade,  
A friendly *tear* releaves the *heart*,  
And bears a sympathetic part.—  
In brighter days the *pen* cou'd charm,  
And science could the bosom warm;  
To books I flew, read *riddles* o'er,  
And try'd their meaning to explore.  
On Pegasus oft took a flight,  
Above the tallest *ladder's* height;  
To where in Pindus' hallow'd groves,  
The muses sport with laughing loves.  
(Thus *time* with varying scenes em-  
A thousand visionary joys, [ploys  
To put a *stop* to passion's strife,  
And ease the mental ills of life,)  
My work could then my mind amuse,  
For much I lov'd the *thimble's* use.—

But now alas! what charm remains,  
Nor work nor books can ease my pains;  
A pensive walk in cypress bowers,  
Shall soothe the melancholy hours;  
No *bayrick* there shall intervene,  
To spoil the lonely silent scene.—  
Where *vires* with branches all inwove,  
A pleasing emblem shew of love,  
The *gard'ner* there may shew his art:  
But oh! the sorrows of the heart,  
Ah! what can cure? no human care  
Can snatch me from the fatal snare:  
Too deeply sunk in mortal woe,  
Say what can shield me from the blow:  
Not gen'rous wines of richest juice,  
Nor all the *oven* can produce,  
Can please the taste or charm the heart,  
Since Sylvia must from S\*\*n part.

The Rural Pair, by Mr. Geo. Lodge.

How peaceful lives the rural swain,  
How blest'd his happy mate,  
Who of their state do ne'er complain,  
Nor blame the hand of fate.  
To store the *oven*, spit, or pot  
With good and wholesome fare,  
The wife provides; the husband's lot  
In *garden* shews his care.  
He spreads the branches of the *vine*,  
He cultures well his ground;  
Sometimes to feed with *bay* his kine,  
He mounts the *ladder's* round.

No *tears*, no strife disturb their joy,  
No *period* to their love;  
Their heart-felt blis can never cloy,  
Nor ought their peace remove.  
Altho' no *riddles* they indite,  
Her *thimble* she can use;  
And he enough with *pen* can write,  
To serve his needful views.  
No joys like these to courts belong,  
Or wait upon the great;  
There's none of all the flatt'ring  
So happy in his state. [throng,

The same answered by Eugenio.

Forgive, O Hymen! and ye fair excuse  
The seeming insults of a thoughtless muse.  
Feign'd were those sentiments, but these impart,  
Without reserve, the dictates of my HEART.  
Before the PERIOD of my youth is past,  
And age assails me with his chilling blast,  
To share the joys, and soothe the cares of life,  
I'd wish to have a kind, good-natur'd wife;  
One who'd prefer my little rural seat,  
To all the pomp and splendor of the great.  
I would not chuse her of that haughty race,  
Who think the THIMBLE's use a high disgrace;  
But would select her from a middle state;  
Her birth not meanly low, nor vainly great.  
If, when the tale of woe assail'd her ear,  
Down her fair cheek fast flow'd the crystal TEAR,

9  
8

11

7



'Twould give me joy the pleasing proof to see  
 Of so much tender sensibility.  
 For her the GRAPE's delicious juice should flow,  
 For her the GARD'NER toil the OVEN glow,  
 The RICK for her its golden grain should yield,  
 For her the plowman till the fertile field. —  
 Ambition's LADDER I'd ne'er wish to climb,  
 But, with my lot content, would spend my TIME  
 In calm domestic joys — for these bestow  
 That real bliss th' ambitious never know. —  
 But stop, my PEN, my purpose is obtain'd,  
 Since each of the ENIGMAS is explain'd.

### Miss Betty Smales's Address to an absent Friend.

- |                                                                                                                                                             |                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Loss of friends ne'er distress'd me,<br>Heart-felt grief I never knew,<br>Hopeless love had ne'er oppress'd me,<br>Joyous on my moments flew.            | Clustering <i>grapes</i> in vain invite me,<br>Flora's beauties give me pain.<br>5. Sad I <i>climb</i> the bay-clad mountains,<br>Wander down the silent vale,<br>Hollow rocks and weeping fountains,<br>Sympathise my plaintive tale. [ing |
| 2. Till relentless fate did tear thee<br>From this tranquil rural cell:<br>Still methinks I see, I hear thee<br>Bid us all a long farewell. [ble;           | 6. O'er my face, where once sat glow-<br>Roseat health without controul,<br>Pensive looks, and tears fast flowing,<br>Speak the anguish of my soul.                                                                                         |
| 3. The remembrance makes me trem-<br>No <i>enig.</i> my mind can ease;<br>Hence my tuneful lyre, my <i>thimble</i> ,<br>You have lost your power to please. | 7. Dear lov'd friend, can I forget thee?<br>No; I'll ever sing thy praise,<br>And in mournful sighs regret thee,<br>Till the <i>period</i> of my days.                                                                                      |
| 4. Sylvan scenes no more delight me,<br>Gardens yield their stores in vain,                                                                                 |                                                                                                                                                                                                                                             |

### Amanda's Lament for the Death of a Friend.

In what sad strains shall I relate my woe?  
 From sorrow's PEN can tuneful numbers flow?  
 Better the trickling TEAR, and sigh impart  
 The deep distresses of the mournful HEART.  
 No more shall I behold that happy TIME  
 When RIDDLES pleas'd, or subjects more sublime  
 Delight inspir'd — those joys, alas! are o'er  
 Since Strephon, gentle youth! is now no more.  
 Not daisy-painted meads, nor woodbine bow'rs,  
 Nor all the GARD'NERS variegated flowers  
 Can from my breast the settled gloom remove,  
 Or soothe the pangs of grief and hapless love.  
 No longer now the purple GRAPE I prize,  
 Nor all the friendly OVEN's kind supplies.  
 With envy oft the happy swain I've ey'd  
 On LADDER singing at the HAY-RICK's side:  
 With envy often heard the milk-maid's song,  
 As void of care she tripp'd the meads along.  
 Oft now I seek the solitary shade,  
 Where no rude swains or prying nymphs invade;  
 There drop the tender tear, and sadly sigh;  
 My needle, THIMBLE thrown neglected by.

When shall I find a *PERIOD* to my pain!  
When tread the pleasing paths of peace again.

8

## The Enigmas answered by Rusticus.

How blest the man whose *hours* are spent  
In rural ease, where sweet content,  
With rosy health and peace impart,  
Delicious raptures to the *heart*!  
There he enjoys his books and *pen*,  
Far from the *dark disguise* of men.—  
Where *bayricks* o'er the rustic dome  
Rear their tall heads I love to roam,  
Or walk the *garden's* pleasing round,  
Where vines with *luscious loads* are  
crown'd.

Nor wou'd I quit the humble plain,  
Ambition's topmost *step* to gain.  
What *tears* from mad ambition flow,  
Th' unhappy great-ones sadly know.  
Be then my lot in calm repose,  
To eat the *bread* that heaven be-  
flows,  
Till heaven, that *shields* from pain  
and strife,  
Shall put a *period* to my life.

## The deserted Swain, by Mrs. Blanch Lean, near Redruth.

1. In a pleasant shady bower,  
Form'd by nature, void of art,  
Damon sat the noontide *hour*,  
And thus eas'd his love-sick *heart*.  
2. Fairest Mira is perfidious,  
To her Damon most unkind;  
Sighs, nor *tears*, nor vows religious  
Could the fickle charmer bind. [is,  
3. Who could thought such day as this  
Wretched Damon e'er should prove,  
When in innocent carefesses,  
Mira own'd me for her love.  
4. How her wit my fancy *fired*,  
When she read the *enigmas* o'er;  
*Gard'ner, thimble, grapes*—desir'd,  
Soon she would the whole explore.

5. While the vot'ries of ambition,  
*Climbing* up to fame have been;  
We, content in our condition,  
Wish'd to pass thro' life unseen,  
6. Oft she'd say, my Damon hear me,  
Mira lives for thee alone —  
Witness all ye woodlands near me,  
Mira's false, and I'm undone.  
7. O ye sweetly murm'ring fountains,  
On your streams my plaint convey;  
Hear, ye beauteous lofty mountains,  
And reecho back my lay.  
8. *Pent* in shades my loss bewailing,  
Still one subterfuge I have,  
For despair and grief prevailing,  
Find a *period* in the grave.

## The Enigmas answered by Mr. John Rusher.

Thro'out the world there's scarce a  
trade,  
But is conducive to your aid:  
The powder'd *baker* makes you bread,  
The delving *gard'ner* from his bed  
Presents you *grapes* and other fruits,  
In proper *time* with herbs and roots,  
Th' farmer toils for corn and *bay*,  
Be truly wise then, while you may,

Nor vainly think a sigh or *tear*,  
Will save you when your *period's* near;  
Draw near to God with all your *heart*,  
For each *enigma* will depart,  
Whene'er your passing *bell* is rung;  
And that may happen ere 'tis long,  
This year, this month, this week or  
day,  
Be truly wise then, while you may.

## The same answered by Creep-mouse.

And now I'm once crept into print,  
With fresh alacrity I squint  
At Lady Diary, and again  
Expose the labours of my brain.  
The first *enigma* is an *oven*, [shove in;  
Whence Christmas pies our mouths to

A *gard'ner* neat, and then the *grape*,  
Whence many a man becomes an ape;  
The 4th is *time*, if rightly guess'd,  
For ever changing, near at rest.  
A lofty *baycock* next up-springs,  
Like pyramids of Memphian kings,

A ladder then is seen to rear  
 Its steep ascent; next falls a tear. —  
 But stop, what means my flutt'ring  
 It now a secret will impart; [beart?]  
 Winter, by Mr. J. Jackson, Master of Hutton-Rudby School,  
 near Stokesley.

|                                               |    |
|-----------------------------------------------|----|
| The trees are lopt, the oven is their doom,   | 1  |
| The GARDENER beholds stern winter's come;     | 2  |
| The GRAPES, alas! we now no more behold,      | 3  |
| For various TIME congeals the rain by cold;   | 4  |
| See lofty HAYSTACKS cover'd by the snow;      | 5  |
| No towering prospects now appear to view;     | 6  |
| Alas! Floretta sheds the briny TEAR,          | 7  |
| That winter puts a PERIOD to the year;        | 8  |
| But yet my HEART with her can sympathise,     | 9  |
| When I muse on ENIGMAS for a prize;           | 10 |
| For whilst her THIMBLE she plies by the fire, | 11 |
| If I can PEN them right, I've my desire.      | 12 |

The Enigmas answered by Mr. William Jones.

- |                                                                                                                                                             |                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. My Phillida, gentle and kind,<br>At length to my wish has comply'd;<br>In Hymen's soft fetters we're join'd,<br>And nothing our hearts shall divide.     | Who toil in the mead by the mill,<br>And spread the brown bay with the<br>prong.                                                                            |
| 2. No slave to the times is my fair,<br>More pleasure she always partakes,<br>To temper the oven with care,<br>When cheese-cakes and custards she<br>makes. | 5. Our cottage and yard to adore,<br>The products of autumn combine,<br>With ladders we store up the corn,<br>And tear the ripe grapes from the vine.       |
| 3. When plains are enamell'd by<br>And gardens are pleasant and gay,<br>Delighted we hear the birds sing,<br>And see the young innocents play.              | 6. When winter horriſſic bears sway,<br>With riddles, the thimble, and pen,<br>Our time steals with rapture away,<br>Till spring, lovely spring! come agen. |
| 4. In summer the bottles we fill,<br>To cheer the gay rustical throng,                                                                                      | 7. Thus, thus may the seasons roll on,<br>Till life's final period shall close;<br>Then calm as the bright setting sun,<br>May we quietly sink to repose.   |

The same answered by Mr. William Rehſur.

- |                                                                                                                                                       |                                                                                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. O hear me, ye powers divine,<br>Who earthly enjoyments diſpenſe,<br>I covet nor riches nor wine,<br>(Low gratifications of ſenſe):                 | 3. If I wed, may it be to a fair,<br>Whoſe beart is to flatt'ry averſe,<br>Who the thimble can uſe with an air,<br>While I the enigmas rehearſe.          |
| 2. But give me a neat little cot,<br>With oven and garden ſupply'd;<br>Let grape-trees ſurround the ſweetſpot,<br>And bay-making plains on each ſide. | 4. The bleſſing of health to impart,<br>Till the time when my period draws near;<br>O then may we meet death's fell dart,<br>Without or a ſigh or a tear. |

For want of room we muſt omit other ingenious answers by Meſſrs. Amintor, Atkinſon, Anderson, A. B, Mrs. B, Bayley, Beckett, Miſs S. Blackneck, Bradberry, Cleora, Miſs Cooke, Debiana, Denning, Dowden, Eland, Fairbank, Fleſcher, Florella, Gumley, A. H, I. H. Hall, Jack o'tb' Green, Juvenis, Knowles, R. M, Marks, Morris, Needham, Nield, Oliver, Philocalus, Mrs.

*Prudent, Richardson, Rowe, Simpkin, Smith, Swift, Telemachus, Miss Sarah Walker, Miss Sarah Ward, Went, Willet, and Williams.*

## ANSWERS to the REBUSES and QUERIES.

The REBUSES answered by Miss Eliz. Cooke, of Tinsley.

To Mr. Jackson.

Sir,

You're the man — "who's learned, kind, and true":

*Penrose*, the nymph — "sincere and virtuous too";

*Robson's* the fair — "in whom all virtues shine";

(A character indeed almost divine!)

*Chapman's* — "unmatch'd, in manners as in face,

Skill'd in each art, adorn'd with ev'ry grace";

If you've a mind to *wed*, pray chuse at home,

For three such maids! were never known at *Rome*.

The same answered by Mr. Francis Smith.

In Hymen's *bands* what sweet repose, | Could they with such united be!  
Is found with *Chapman* or *Penrose*; | Whose virtue guides to endless day,  
What joys would *Jackson—Robson* see, | "Tho' *Rome* or hell obstruct the way".

The same answered by Cleora.

Let *Penrose* be virtuous, let *Robson* be fair,

And at *Rome* to Miss *Chapman* tho' none may compare,

Yet while to young *Jackson* by *wedlock* I'm bound,

No envious thought in my breast shall be found.

The REBUSES answered by Hebe.

The rose and the lilly on *Chapman's* fair face,

The light'ning in *Robson's* or *Penrose's* eye,

The learning of *Jackson*, and each envy'd grace,

Pass a few fleeting years, must all perish and die.

Britannia's fam'd structures, (as *Rome's* did before)

Shall tumble to dust, and be thought of no more.

Then, in *wedlock* or single, consider ye fair,

Bid trifles adieu, and make virtue your care.

The same answered by Jack o'th' Green.

That Miss *Chapman's* accomplish'd, is freely confess,

Miss *Penrose* with learning is grac'd;

That *Jackson*, and *Robson* with virtue are blest,

No *Lucretia* of *Rome* was more chaste.

But alas! I no more sing the praise of the fair,

Since *Delia* has left me forlorn,

So that *wedlock* shall never relieve my sad care,

And my griefs are too great to be born.

The same by Miss Sarah Ward.

*Penrose*, *Rome*, *Jackson*, *Robson*, — define,  
Each rebus, if *Chapman* and *wedlock* you join,



The same by R. M. of Swalefield.

Believe me, friend Jackson, tho' *Penrose* be join'd,  
In *wedlock* to her happy swain;  
Without going to *Rome* fair maids you may find,  
Since *Robson* and *Chapman* remain.

The same by Mr. Thomas Eland.

Friend Jackson, Miss *Robson* and *Chapman* are pretty,  
No doubt they are learned, good-natur'd and witty;  
Like *Penrose* they're virtuous, merry and wise,  
And the pleasures of *wedlock* will next be their prize.

*Other ingenious answers were given by Messrs. J. Almond, W. Anderson, C. Atkinson, W. B., J. Bayley, Miss Sarah Blackneck, Miss Diana Browne, Creep-mouse, W. Dighton, G. Dixon, R. Dawden, J. Fairbank, J. Hall, Higbland Laddie, J. Jackson, W. Jones, G. Lodge, J. Markes, J. Needham, S. Oliver, Philocalus, P. R., W. Rebsur, A. Rowe, R. Richardson, Simpkin, Miss Betty Smales, Telemachus, W. Turner, Miss Sarah Walker, and Kit Went.*

QUERY I. answered by Mr. Thomas Eland.

According to Sir Wm. Temple, the interjection Bo! or Boh! arose from a certain northern captain of that name, (son of Odin) a valiant and successful warrior, and of a stern and terrible countenance; whose name on those accounts struck a terror into his enemies, and often gained him the victory without a combat. It would be well, however, if nurses would not make use of such means to still their children, as I have known bad consequences attend the frightening of them.

This was answered in the same manner by *Miss Cooke, Messrs. Fletcher, Jackson, Lodge, R. M., Rebsur, Richardson, Telemachus, and Turner*. It was also answered by *Mr. Needham, Mr. Rowe, and Mr. Swift*.

QUERY II. answered by Mr. Richard Denning.

When a person has acquired a thorough knowledge of the sciences, especially the sublime, or what are called Ethics, by contemplating the divine attributes and the works of God in the universe, he will be possessed with such real and solid happiness, as I think is no other way attainable in this life.—On the other hand, he who knows little or nothing at all of science, has as it were his whole soul inactive or uncultivated, or at best only occupied with trifling and mean objects and pursuits. The former of these persons therefore, seems to me to be far the more happy.—Of the same opinion are *Mr. G. Lodge and Mr. Samuel Oliver, and Wm. Scholasticus*, who also quotes these lines from *Pope*, viz.

A little learning is a dangerous thing,  
Drink deep or taste not the Pierian spring;  
There shallow draughts intoxicate the brain,  
And drinking largely sobers us again.

But *Mr. J. Jackson* is of a contrary opinion, and says that "a man of the most scientific learning may be compared to a miser, who is still grasping for more. He who has a little, wishes for much. But he who has none, knows the value of none; and is, in my opinion, the happiest man, because he is generally content."—And of this same opinion are

Messrs. *Fletcher, R. M. Needham, and Turner.* But Miss *E. Cooke, Mr. Wm. Rebsur, Mr. Alex. Rowe, and Mr. Wm. Swift* think that happiness depends not so much on the degree of learning, as on the use we make of it.

QUERY III. answered by Mr. Geo. Fletcher.

The different operative quality of butter upon the human constitution, arises from the vital heat and muscular motion of the body. For fresh butter taken in the morning, when the body is strengthened and braced by the night's repose, and the digestion assisted by the salubrity of the morning air, is an excellent balsamic, abating the acrimony of the humours, &c. Again, butter taken at noon, is of a more attenuating laxative quality, as the vigour of the body is weakened, and the digestion but gently performed, it becomes slowly subdued and mixed with the other juices, from whence its salutary qualities are abated. But taken in the evening after the exercise of the day, it obstructs perspiration, separates from the other fluids, and swims undigested on the stomach, whence it turns rancid, alkaline, and putrid.—This was also answered by Miss *E. Cooke, Messrs. Eland, Jackson, Lodge, Rowe, Swift, and Turner.*

QUERY IV. answered by Mr. Geo. Fletcher.

Metals are well known to be the best conductors of common and electrical fire; therefore the handle, being placed to the fire, immediately conducts the heat to the liquor, which partly lessens the elementary effect of it on the ear. Thus the imperceptible particles of heat continually endeavour to disengage themselves, and are easily imbibed by the liquor. And the case will be the same in vessels in ebullition; for whatever part of the vessel is applied to the fire, it will be considerably cooler than the surface of the contained liquor at its aperture.—Answers were also given by Miss *Cooke, Messrs. Jackson, Lodge, R. M. Rebsur, Rowe, Swift, and Turner.*

QUERY V. answered by Mr. J. Jackson, of Hutton-Rudby School.

The juices of fruits, as well as worts drawn from mashes, are all simple, till they are fermented; by which means a quantity of sulphurous air becomes fixt in the body of the liquor; which is no sooner received into the stomach, than a kind of fresh fermentation takes place, by the heat of the body; from which the fume ascending through the carotid arteries, &c. to the brain, causes a kind of repletion of the meninges, and a compression of the fibres: hence also an obstruction of the pores and passages of the brain, which with a frequent and disorderly pulsation of the fibres, causes the disagreeable symptoms of drunkenness.—This was also answered by Miss *Cooke, Messrs. Eland, Fletcher, Lodge, Oliver, Rowe, Scholasticus, Swift, and Turner.*

NEW ENIGMAS.

I. ENIGMA 637, by Mr. William Allison.

With all things I'm found, yet to nothing belong,  
Tho' a stranger to crouds, yet I'm still in a throng;

And, tho' foreign to music and all its soft pow'rs,  
 In songs and in epigrams, ladies, I'm yours.  
 Tho' no bird ever claim'd me, yet, "true is my tale",  
 In the head of a goose, or the wing of a quail,  
 You'll readily find me; yet, twenty to one,  
 I'm not in the feather, the flesh, nor the bone.  
 Tho' not to be met with in Europe, I vow  
 I'm in Portugal, Germany, Hungary too.  
 Or if to past ages your fancy should roam,  
 I was always at Carthage, tho' never at Rome.  
 Tho' friend to true glory, I'm foe to renown,  
 And tho' heir to a kingdom, I claim not the crown;  
 Yet with kings and with beggars my birthright I claim,  
 But,—enough has been said to discover my name.

## II. ENIGMA 638, by Mr. Sam. Oliver, of Papplewic.

|                                     |                                       |
|-------------------------------------|---------------------------------------|
| Riddling wits, and prying sages,    | Polish'd arms, and well turn'd waist, |
| Who give pleasure to all ages,      | Give not near such pleasure then,     |
| What does wrinkled Phillis wear,    | As does clumsy Phillis, when          |
| That her furrows may appear         | In this rad'ent vest she's seen;      |
| Far more splendid then the grace    | Lovely as a May-day queen.            |
| Of Flirtilla's reg'lar face? —      | Homer has extoll'd the zone:          |
| Sapphire eye, and coral lip,        | Wear it, ladies, as your own:         |
| (Where nectarian sweets we sip);    | It shall swell your captive train,    |
| Cheeks of blended rose and lillies, | Make the old be young again;          |
| Charm not half so much as Phillis;  | Make the ugly handsome, and           |
| Iv'ry neck with beauties grac'd,    | Me your servant at command.           |

## III. ENIGMA 639, by Mr. J. Jackson, of Hutton-Rudby School.

From mother earth my various parts have sprung;  
 Parts which you, enigmatists, long have sung;  
 Therefore no stranger now appears to view,  
 No form but well is known to most of you. —  
 I'm carried, and I go, nay sometimes fly;  
 If not in haste I ride, you can't deny;  
 But when I ride I stand, and can't oppose  
 A rascal that imperious holds my nose;  
 But if his tether breaks, away I fly;  
 No more I ride, nor unto him draw nigh.  
 I'm something huge, yet this may strange appear,  
 What carries me, a farthing's weight won't bear.  
 One I have, three upright arms quite round;  
 Some hundred hearts within my belly's found:  
 I've wings can swiftly waft me to the Nile,  
 And arms by which I guard Old England's isle;  
 For were my formidable race to fail,  
 You'd soon be slaves, or pris'ners in some jail:  
 Therefore as I am of such service found,  
 In Diary's page (next year) my praise resound.

## IV. ENIGMA 640, by Kit Went.

|                                 |                                   |
|---------------------------------|-----------------------------------|
| Often talk'd of, never seen,    | Waits a while, then goes his way, |
| Ever coming, never been,        | When I'm coming, he'll not stay,  |
| Dayly look'd for, never here,   | Thousands for my presence wait,   |
| Still approaching in the rear.  | But, alas, such is my fate,       |
| Roger will not budge from home, | Tho' expected to appear,          |
| Till, he says, that I am come;  | They will never see me here.      |

## V. ENIGMA 641, by Mr G. Lodge, (formerly Cœlebs).

Does youthful Strephon, Delia fair attend,  
 A constant lover, and a faithful friend;  
 Like him, ye fair, I wait on your commands,  
 Replete with warmth salute your lovely hands. —  
 From distant gloom, and clouds of blackest night,  
 Where sun nor moon e'er darted radiant light,  
 I take my birth, conceal'd from ev'ry eye,  
 The foster-child of calm security.  
 Till banded villains, dreadful to relate!  
 Attack'd my parent in her close retreat;  
 With cruel hands her tender bosom tore,  
 And me her darling thence in triumph bore;  
 Misshaped and mangled, to a dismal cell,  
 Like those where fiends eternally do dwell;  
 There soon consign'd unto the scorching flame,  
 Whose rapid force dissolves my tender frame.  
 Next by repeated blows, repeated wounds,  
 A change is made which my late form confounds:  
 A mouth I have, yet neither head nor chin,  
 A body too, with needful food therein.  
 'Tis then I wait on you, ye lovely fair,  
 A faithful slave, and truly worth your care:  
 By you esteem'd, caress'd, and often fed,  
 You give me food, yet never give me bread:  
 I aid your charms, new lustre I dispense,  
 To faded bloom, or spotless innocence:  
 When radiant sol, with his refulgent ray,  
 Enlivens nature, and revives the day;  
 At your command, and in your hand I rove  
 O'er plains and lawns, yet shun the verdant grove;  
 For there you ladies shou'd with caution tread,  
 Since oftentimes mischief lurks beneath the shade.

## VI. ENIGMA 642, by Philodiarra.

|                                    |                                      |
|------------------------------------|--------------------------------------|
| Ye riddling wits for me make room, | With dirty, ugly queans am seen;     |
| While thus in masquerade I come:   | You'll in perspective views find me: |
| My story read with strictest care, | All eye I am, yet nothing see.       |
| For very seldom I appear.          | Learning I love, tho', sad to tell,  |
| I'm an exotic said to be, [see;    | With ev'ry senseless beau I dwell:   |
| Tho' with the queen you may me     | Lieutenant generals I attend,        |
| With beauteous nymphs I trip the   | Yet war and bloodshed ne'er be-      |
| green,                             | friend. —                            |



|                                   |                                        |
|-----------------------------------|----------------------------------------|
| When Israel thro' the wilderness  | E'en with those quails I might be      |
| To Canaan's bounds their way did  | found.                                 |
| press,                            | [prove; Enigmatists of judgment found, |
| They manna loath'd, their God did | To all the world declare my name,      |
| Who sent them quails, o wondrous  | And win the prize, or take the         |
| love!                             | fame.                                  |

VII. ENIGMA 643, by Mr. Wm. Jones, of Heyford.

Come, fancy, in thy motley robe array'd,  
 With sportive flights my artless numbers aid;  
 With art prepare a thin translucent veil,  
 To shew my charms, and all my faults conceal;  
 Then shall the subject world allegiance own,  
 And stubborn rebels bow before my throne. —  
 For me, ambition drops his tow'ring schemes,  
 His baseless projects, and his happiest dreams;  
 For me, the miser from his iron'd hold,  
 In wild confusion strews his treasur'd gold.  
 The youthful hero, oft by me impell'd,  
 Gains lasting honours in th' ensanguin'd field.  
 Poets and sages feel my potent ray,  
 And cold December glows like blooming May.  
 Such are my charms, I make the idiot wise,  
 And haughty tyrants cease to tyrannize:  
 I rouse the sluggard, make the coward brave;  
 Release the captive, and the free enslave.  
 In ev'ry kingdom uncontroll'd I reign,  
 Dispensing pleasure, or creating pain,  
 On Britain's isle I beam with looks serene,  
 And shine conspicuous in her gracious queen:  
 With her fair daughters oft am seem to rove  
 The verdant, plain, hill, dale and leafy grove.  
 Soft-sighing shepherds own my pow'r divine,  
 And kings and princes bow before my shrine;  
 Yet I'm at best like light fantastic toys,  
 That smiles creates, and sullen frowns destroys.  
 Then wisely, ladies, count my favours vain,  
 For short and transient is my longest reign;  
 Prize my superior, she's of heav'nly race,  
 Nor time nor accident her charms efface;  
 Make her your inmate, own her gentle sway,  
 Note well her precepts, all her rules obey;  
 In peaceful paths she'll guide your erring feet,  
 And make your earthly happiness complete.

VIII. ENIGMA 644, by Mr. J. Goodaker.

|                                     |                                   |
|-------------------------------------|-----------------------------------|
| From foreign climes I partly come,  | Hear then my birth! — My parent's |
| Part claim from Britain as my home; | death,                            |
| Own a large monster for my sire,    | My matter form'd, tho' not my     |
| And boast a winged parents fire,    | breath.                           |
| Man, aiming still at novelty,       | Whilst I in lifeless motion laid, |
| Caught me, and made a prodigy;      | Man thro' my body drew my head;   |

|                                       |                                        |
|---------------------------------------|----------------------------------------|
| With cords confin'd my quiv'ring      | Am often bought and often sold.        |
| parts,                                | I aim at beauty, tho' 'tis known,      |
| And practis'd all his cruel arts :    | The lot will never be my own.          |
| Till made complete for ev'ry end,     | Whene'er I work, I, dress'd in white,  |
| He, from a tyrant, prov'd a friend ;  | Stand on my head ! a wond'rous sight ! |
| Boasted the properties of me,         | While ladies oft me close embrace,     |
| And led me into company.              | And gaze with pleasure on my face.     |
| Now like a pigmy I appear,            | From foreign climes resounds my        |
| Am here, and there, and ev'ry where ; | fame,                                  |
| With beard like Israelite of old,     | So tell, ye British fair, my name,     |

## IX. ENIGMA 645, by Mr. Rd. Willett.

In rural scenes, on banks, with daisies py'd,  
 Where purling streams in cool meanders glide,  
 Where Philomela on the dew-pearl'd thorn,  
 With early matins hails the rising morn :  
 There we are found, graceful, defensive, fair,  
 Riding important thro' the yielding air.  
 In days of yore (but not in Saturn's reign,  
 For lust had bred deceit, deceit bred pain),  
 An eastern maid of Belus' royal blood,  
 Us firmly grip'd to save her from the flood ;  
 We felt and sav'd ; but, ingrates to the fair,  
 Gave her a prey to lust and fell despair :  
 Does this offend, seek not the vengeance due,  
 'Tis ours to curb, and to return it too :  
 We warriors are, and many a conflict wage,  
 Blood, wounds, and death are emblems of our rage.  
 We brav'd the great Alcides to the field,  
 But to Alcides were constrain'd to yield ;  
 His great intent, by greater strength he gain'd,  
 We conquer'd were, he, as he wish'd, attain'd. —  
 As to our birth, that just as strange as odd is,  
 Unparallel'd, except by wisdom's goddess ;  
 We were not foster'd in the fields of love,  
 But sprang *directly* from the head of Jove.  
 Being thus descended, mark th' indulgence giv'n,  
 We're made immortal as the stars of heav'n :  
 Take one hint more, and then our tale is tol'd,  
 The moon declares us when but two days old.

## X. ENIGMA 646, by Mr. Thomas Woolston.

|                                       |                                       |
|---------------------------------------|---------------------------------------|
| Let others boast of high descent, and | Subordinate I move, yet I've do-      |
| trace,                                | trous race ;                          |
| From ancient heroes their illustri-   | Gay meads and rivers, houses, flocks  |
| It matters not to whom I owe my       | And from my bounds, behold ! long     |
| birth,                                | prospects rise,                       |
| Nor boast I ought beyond my present   | Of mountains dim descri'd in di-      |
| For know, ye fair, to all my fame is  | Now turn your eyes to yon sequester'd |
| known,                                | shade,                                |
| From Scotia's mountains to the torrid | There see the swain and his ena-      |

|                                                    |              |                                                                          |              |
|----------------------------------------------------|--------------|--------------------------------------------------------------------------|--------------|
| Beneath that shade, that ever bloom-<br>ing grove, | [love.       | With you secure frequent each gay<br>resort,                             | [court.      |
| Design'd the blissful soft retreats of             |              | In town and country, theatre or                                          |              |
| I once to Damon shew'd his Delia's<br>charms,      | [arms;       | Grave politicians, fixt in deep de-<br>bate,                             | [state.      |
| Exulting freight he grasp'd me in his              |              | Consult my aid while they adjust the                                     |              |
| "This", said the enraptur'd youth,                 |              | With law and physic too I oft ap-<br>pear,                               | [clear;      |
| "O lovely fair,                                    | [wear":      |                                                                          |              |
| This for thy beauteous sake I'll ever              |              | And help their reas'ning faculties to                                    |              |
| True to his word, and faithful to his              |              | In short with ev'ry class, with beau<br>love,                            | [lowly Nell; |
| With him far distant from his fair                 | [I rove;     | Here mix with ladies, there with                                         |              |
| There pensive oft in me he tries to<br>trace       | [face:       | Carefs'd by most of those by whom<br>I'm us'd,                           | [bus'd;      |
| The various beauties of his Delia's                |              | Again by others I'm as much a-                                           |              |
| But ah! in vain — he finds no kind<br>relief,      |              | To my admirers under cares and<br>grief,                                 | [lief;       |
| I only shew the picture of his grief.              |              | My charms afford a pleasing kind re-                                     |              |
| Yet know, dear ladies, oft I kiss your<br>hand,    | [command.    | And tho' my persecutors are severe,<br>Yet oft from them I draw the cry- |              |
| And wait obsequious on your lov'd                  |              | stal tear.                                                               |              |
| But whatsoe'er my form, I'm such a                 |              | Take one hint more, to raise my<br>fame, 'tis told                       | [gold.       |
| spright,                                           | [from fight. |                                                                          |              |
| Beneath your silken folds I shrink                 |              | I oft give freedom when my dress is                                      |              |

XI. (PRIZE) ENIGMA 647, by Mr. R. Richardson, of Frosterly.

*Favete linguis.*

*Horace.*

He lovely fair, whose piercing wit can clear  
The mystic page, and bid fair truth appear,  
Forgive a friend who boldly comes to claim  
Your patronage; — a candidate for fame.  
When awful Night her ancient reign'd enjoy'd,  
And gen'ral darkness fill'd the gloomy void;  
Ere hand omnipotent this goodly frame  
From chaos hurl'd, I do my era claim;  
But when th' almighty mandate, issued forth,  
Gave to the universe its wond'rous birth;  
Confounded by th' amazing scene I fled,  
And in a dreary den secur'd my head;  
There safe secluded from the face of day,  
Where sol ne'er shoots his animating ray,  
My empire still remains; — nor start, ye fair,  
If from my confines crept, in open air,  
I dare to wait on you, your steps attend,  
And from the tale of woe your tongue suspend.  
When faithful Damon, long neglected swain!  
Has told his griefs, and told them all in vain;  
When pray'rs nor tears, nor heart-felt sighs can move  
Relentless Delia to reward his love;  
The wretched youth invokes my friendly aid,  
And I perhaps subdue the stubborn maid.

If farther you my merits wou'd descry, —  
 No undertaker boasts more pow'r than I;  
 (Such the depravity of present times!)  
 The poor-man's virtue, and the courtier's crimes,  
 Tho' of the deepest, most ensanguin'd dye,  
 By me inter'd, in dark oblivion lie.  
 Yet start not, fair ones, if to peace inclin'd,  
 In me a quiet, honest friend you find:  
 No cries affright, no tumults swell the day,  
 When I exert my softly-soothing sway.  
 That wit's my enemy, full well you know,  
 Yet wisdom on the fool I oft bestow. —  
 Where legal arbiters of fate prevail,  
 And awful Justice holds aloft her scale,  
 (Correcting guilt, she lifts the just to fame;)  
 E'en there, ye fair, attend, and hear my name.

### NEW REBUSES and QUERIES.

#### I. REBUS, by Mr. Isaac Gumley, of Countesthorpe.

A man of whose chastity wonders are told,  
 A place that was highly esteem'd for its gold;  
 A monarch who once from his throne was expell'd,  
 And dwelt many years with the beasts of the field;  
 A prophet who mounted triumphant to heav'n;  
 A prince to whom wisdom and riches were given;  
 Th' initials connected with proper regard,  
 Will name an ingenious Northamptonshire bard.

#### II. REBUS, by Maria.

Take that which when we possess, we no pleasure can taste,  
 And the intial of what we too frequently waste,  
 These, join'd right together, will quickly declare,  
 What ruins the health of many a fair.

#### III. REBUS, by Mr. William Lashmar.

The sable time when darkness veils the sun,  
 The part of day when work and labour's done,  
 A king's request that heaven did impart,  
 An ancient pile rais'd by his skill and art,  
 A well-known grain that grows on Suffex plains,  
 The bird whose note the choicest fancy gains;  
 Join these initials, and you'll quickly find  
 A genius fam'd, of an exalted mind.

#### IV. REBUS, by Mrs. B of Salisbury.

The lowest creature of the reptile race;  
 An useful liquid known in every place;  
 The bird that first salutes the early dawn;  
 A beast most fierce, ne'er seen on verdant lawn;  
 A kingly tree that grows on British ground,  
 A point well known to sailors in their round:  
 If you of these th' initials please to take,  
 A county town of trade with ease you'll make.



## V. REBUS, by Mr. Francis Smith.

I'm a very odd carriage — I carry Sir John —  
 But yet the fair ladies ne'er waited upon.  
 This carriage turn backward, freight comes to your eyes  
 A thing Mrs. Snip does exceedingly prize.  
 Connect both together, directly you'll see  
 A place, when at rest where the carriage should be.

## VI. REBUS, by Malvolio.

|                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>The first part of my composition,<br/>         Is us'd by men of low condition,<br/>         Where those who wo'nt such vessel<br/>         A bason or a tankard chuse. [use,<br/>         The next part is a simple word,<br/>         In constant use with clown and lord,<br/>         The last part of my patch-work frame,</p> | <p>Is one of ten that I could name;<br/>         But they're so common, all men know<br/>         That most men have them, ladies too,<br/>         In town and country, high and low,<br/>         These homely parts my frame com-<br/>         pleat;<br/>         I'm homely too, but good to eat.</p> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## I. QUERY, by Amintor.

What animal in the whole creation is the most beneficial to mankind, and in what doth its superior excellence consist?

## II. QUERY, by Mr. George Lodge.

How long has the solemnization of matrimony been vested in the hands of the clergy?

## III. QUERY, by Mr. H. Morris.

Take a cup of cold water fill'd up to the brim,  
 Then one after t'other slip ten shillings in;  
 When this you've perform'd, I'd have you discover  
 What is the reason the cup won't run over.

## IV. QUERY, by Mr. Mark Elstob, of Shotton.

Why does light pass more freely through paper after it is oil'd, than before?

## V. QUERY, by Mr. Richard Welbourn.

Philosophers say (to prove that the dark parts in the moon are sea) that water reflects less light than earth; many particles of light passing through, and losing themselves in the water. If so, why does water in a pond or vessel reflect strongly the rays of the sun on objects placed above them?

\* \* \* The number of prizes are eight, to be determined by lot, viz. one of 10 and one of 8 diaries for the solutions of the prize-enigma; two of 10 diaries each for the general solutions of the enigmas; two of 8 diaries each for the solutions of the queries and rebuses; also one of 12 and one of 8 diaries for the solution of the prize-question. The competitors for the prizes given for the solutions of the prize enigma and prize question, must send their letters, containing those solutions, before Candlemas day; and all other letters for the use of the Diary, must be sent before the 1st of May. — Our correspondents are requested to make their compositions as short as possible with propriety; as many are unavoidably omitted from their too great length. They are not however always to conclude that their pieces are rejected when they do not see them inserted presently after they are sent, because they are often kept back for several years, thro' the great number that come to hand, that we may give every one his turn. — Solutions to be sent with all new propositions.

## ANSWERS to the MATHEMATICAL QUESTIONS.

## I. Question 788 answered by Mr. Charles Trelease.

COMPARE the given equation,  $x^4 - 2x^3 + x = a$ , with the general one  $x^4 + ax^3 + bx^2 + cx + d = 0$ , and we shall have  $a = -2$ ,  $b = 0$ ,  $c = 1$ , and  $d = -a$ . Assume  $f = b - \frac{1}{3}aa = -1$ . Now it is a known property of biquadratic equations (see *Simpson's Algebra*, pa. 134 and 155), that if  $c = \frac{1}{2}af$ , or  $d$  either  $= c^2 \div 4f$  or  $= c^2 \div a^2$ , the root may be obtained by the resolution of a quadratic only; the first case of which succeeding in the equation before us, we have  $x = -\frac{1}{2}a \pm \sqrt{\frac{1}{16}aa - \frac{1}{2}f} \pm \sqrt{\frac{1}{4}ff - d} = \frac{1}{2} \pm \sqrt{\frac{3}{4}} \pm \sqrt{\frac{1}{4} + a}$ .

The same answered by the Rev. Mr. Hellins.

The given equation,  $x^4 - 2x^3 + x = a$ , is evidently  $x^4 - 2x^3 + x^2 - x^2 - x = \overbrace{x^2 - x}^2 - 1 \times x^2 - x = a$ , a quadratic; from which, completing the square, &c. we get  $x^2 - x = \frac{1}{2} \pm \sqrt{a + \frac{1}{4}}$ , another quadratic, from which we obtain  $x = \frac{1}{2} \pm \sqrt{\frac{3}{4}} \pm \sqrt{a + \frac{1}{4}}$ , which expression comprehends the four values of  $x$ .

Corol. 1. If  $a$  be less than  $-\frac{1}{4}$ , the term  $\sqrt{a + \frac{1}{4}}$  becoming an imaginary or impossible quantity, all the four roots will be impossible.

Corol. 2. If  $a$  be  $= -\frac{1}{4}$ , the four values of  $x$  will be  $\frac{1}{2} + \frac{1}{2}\sqrt{3}$ ,  $\frac{1}{2} + \frac{1}{2}\sqrt{3}$ ,  $\frac{1}{2} - \frac{1}{2}\sqrt{3}$ , and  $\frac{1}{2} - \frac{1}{2}\sqrt{3}$ ; i. e. the equation will have two pair of equal roots.

Corol. 3. If  $a$  be greater than  $\frac{5}{16}$ , then  $\sqrt{\frac{3}{4}} - \sqrt{a + \frac{1}{4}}$  will be an impossible quantity, and consequently two roots will be imaginary.

Corol. 4. If  $a$  be  $= \frac{5}{16}$ ,  $\sqrt{a + \frac{1}{4}}$  being  $= \frac{3}{4}$ ,  $\sqrt{\frac{3}{4}} - \sqrt{a + \frac{1}{4}}$  becomes  $= 0$ , and the four roots are  $\frac{1}{2}$ ,  $\frac{1}{2}$ ,  $\frac{1}{2} + \frac{1}{2}\sqrt{6}$ , and  $\frac{1}{2} - \frac{1}{2}\sqrt{6}$ .

Corol. 5. Therefore, when the value of  $a$  is between  $-\frac{1}{4}$  and  $+\frac{5}{16}$  (except when it is  $= 0$ ), all the four roots will be real.

Corol. 6. Where  $a = 0$ , the roots are  $\frac{1}{2} + \frac{1}{2}\sqrt{5}$ ,  $\frac{1}{2} - \frac{1}{2}\sqrt{5}$ ,  $\frac{1}{2} + \frac{1}{2}\sqrt{1} = 1$ , and  $\frac{1}{2} - \frac{1}{2}\sqrt{1} = 0$ .

Schol. And hence it is obvious that, if there be a biquadratic equation of this form,  $y^4 - 2py^3 + p^3y = q$ , and you put  $a = q \div p^4$ , the four values of  $y$  will be obtained from this expression,  $y = p \times$

$$\frac{1}{2} \pm \sqrt{\frac{3}{4}} \pm \sqrt{a + \frac{1}{4}}.$$

Solutions were also given by Messrs. *Ja. Adams*, *Chr. Atkinson*, *G. Bewley*, *John Brinkley*, *Demonstratum*, *Ri. Dening*, *Rob. Downen*, *L. Evans*, *John Fletcher*, *Rob. Hartley*, *John Honey*, *Wm. Jones*, *Joel Lean*, *G. Lodge*, *Miss Sus. Merryweather*, *Wm. Reynolds*, *T. Robinson*, *Alex. Rowe*, *Jos. Saul*, *Wm. Terril*, *Tho. White*, *John Whitton*, *Ja. Williams*, *George Wood*, and *Wm. Swift*, who, as some of our correspondents inform us, took the question from the *British Oracle*, where three other solutions are given, but very different from the above.

## II. Question 789 answered by Mr. Wm. Terril, of Redruth.

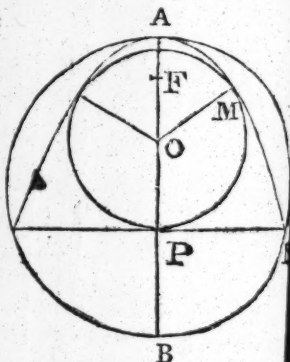
PUT  $b$  and  $d$  for the sine and cosine of  $56^{\circ} 19' 38''$  the latitude;  $s$  and  $c$  for the sine and cosine of  $26^{\circ} 34'$  the difference between the amplitude and altitude at six o'clock; and  $x$  and  $y$  for the sine and cosine of the declination. Then by spherics,  $1 : b :: x : bx$  the sine of the altitude, and  $d : 1 :: x : x \div d$  the sine of the amplitude, and which must be equal to  $bcx + s\sqrt{1 - b^2x^2}$  the sine of the sum of  $26^{\circ} 34'$  and the altitude.

Hence  $x = ds \div \sqrt{1 - 2bcd + b^2d^2} = .3983480$  the sine of  $23^{\circ} 28' 30''$  the declination, shewing the day of the month to be the 21st of June. Hence  $bx = .3315122$  the sine of  $19^{\circ} 21' 38''$  the altitude, and  $x \div d = .7184573$  the sine of  $45^{\circ} 55' 38''$  the amplitude.

This question was also answered by Messrs. *Ja. Adams, J. Bartlett, G. Bewley, J. Brinkley, R. Dowden, L. Evans, J. Fletcher, R. Hartley, J. Honey, J. Jackson, J. Lean, W. Reynolds, T. Robinson, A. Rowe, P. Sharp, C. Trelease, J. Whitton, and J. Williams.*

## III. Question 790 answered by Mr. John Whitton, of Hull.

LET  $F$  be the focus of the parabola,  $O$  the center of the inscribed circle, &c. Put  $a = AB$  the diameter of the circumscribed circle,  $c = 2 OM = 2 OP$  that of the inscribed one, and  $x = AF$  the focal distance. Then will  $PB = 4x$  the parameter,  $OF = a - \frac{1}{2}c - 5x$ , and (by Emerf. Con. B. 3 Pr. 13)  $OF \times BP = OM^2$ , or  $4ax - 2cx - 20x^2 = \frac{1}{4}c^2$ ; and hence 
$$x = \frac{2a - c \pm 2\sqrt{a^2 - ac - c^2}}{20}.$$
 But in



the question the numbers are given too near an equality, for from the last expression it is evident that the greatest value of  $c$  will be when  $a^2 - ac - c^2 = 0$ , or  $c = \frac{1}{2}a \times \sqrt{5} - 1 = \times .61803$  &c. so that if  $a$  be 10, then  $c$  cannot exceed 6.1803 &c.

The same by Mr. John Brinkley, of Harleston School.

PUT  $a$  and  $b$  for the radii of the circumscribed and inscribed circle  $x = AP$ , and  $y = PR$ . Then by the property of the circle  $x^2 + y^2 = 2ax$ , and by the property of the parabola  $2xy - y^2 = 2bx$ ; the sum of these two gives  $x^2 + 2xy = 2ax + 2bx$ , or  $x^4 + 2y = 2 + 2b^*$ : conseq.  $y = a + b - \frac{1}{2}x$ , which substituted in the equation  $x^2 + y^2 = 2ax$ , &c. we get  $x = \frac{2}{5} \times 3a + b \pm \frac{4}{5}\sqrt{a^2 - ab - b^2}$  from which every thing may be found when the numbers are consistent proposed.

\* Corol. Hence it appears that, in any parabola, the sum of the area and bounding double ordinate, is equal to the sum of the diameters of the circumscribing and inscribed circles.

Solutions were also given by Messrs. *Adams, Bewley, Fletcher, Hartley, Jackson, Lean, Reynolds, Robinson, Rowe, Sharp, Terril, Whitton, and Williams.*

V. Quest. 791 answered by Mr. Rob. Hartley of Daresbury.

CONSTR. Draw  $AD \perp PQ$ ; make  $\angle DAG =$  the given differ. and produce  $AG$  till  $GA \times AD =$  the given rectangle; on the diameter  $AG$  describe the circle cutting  $PQ$  in  $B$  and  $C$ ; then, drawing  $AB$  and  $AC$ ,  $ABC$  is the triangle required.

DEMONSTR. Draw  $CHFE \perp$  the diam.  $AG$ . Then arc  $AE =$  arc  $AC$ ,  $\therefore \angle ABC = \angle ACE$ , and conseq.  $ECB = ACB - ABC$  the given differ. of the angles; but the right-angled  $\triangle$ s  $AFH$ ,  $CDH$  have the  $\angle$ s at  $H$  equal, and  $\therefore FAD = FCD$  the given difference by construction. Also the given rectangle  $= GA \times AD = BA \times AC$ , Simp. Geom. III. 25.

The same by Mr. Brinkley, the Proposer.

DRAW  $AD \perp PQ$ ; make  $\angle DAR =$  half the given difference, producing  $AR$  till  $AR \times AT =$  the given rectangle. Make  $TFE \perp PQ$ , and  $AE = ET$ , or  $\angle EAT = \angle ETA$ ; with center  $E$  and radius  $ET$  or  $EA$  describe a circle cutting  $PQ$  in  $B$  and  $C$ . Draw  $AB$ ,  $AC$ , and it is done.

DEMONSTR. Since  $FT$  is  $\perp BC$ , and passes through the center,  $\therefore BF = FC$ , and  $BT = TC$ , and consequently  $AT$  bisects the  $\angle BAC$ ; then (by Simp. Geom. iii. 26)  $AB \times AC = AR \times AT =$  the given magnitude by constr. Also by a known theorem  $\angle ACB - ABC = 2 \angle DAR =$  the given difference by construction.

Nearly according to the one or other of these methods was the construction given by Messrs. *Adams, Aspland, Bewley, Demonstratum, Dorwden, Fletcher, Jackson, Lodge, Parnel, Sanderson, Saul, Trelease, Whitton, and Williams*. And algebraic solutions were given by, Messrs. *Dalton, Dorwden, Lean, Reynolds, Robinson, Rowe, Sanderson, Sharp, Terril, Voite, and Wragg*.

Question 792 answered by the Rev. Mr. John Hellins.

THE fluxion of the area is  $y \dot{x} = x^{\frac{1}{2}} \dot{x} \times \text{h.l. of } \frac{a + x^{\frac{3}{2}}}{a - x^{\frac{3}{2}}}$ , the fluent

which is  $\frac{2}{3} x^{\frac{3}{2}} \times \text{h.l. } \frac{a + x^{\frac{3}{2}}}{a - x^{\frac{3}{2}}} - \text{fluent of } \frac{2}{3} x^{\frac{3}{2}} \times \text{flux. h.l. } \frac{a + x^{\frac{3}{2}}}{a - x^{\frac{3}{2}}}$ .

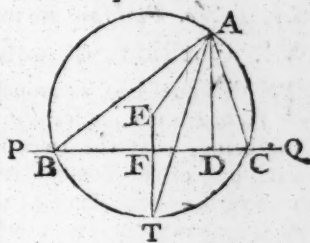
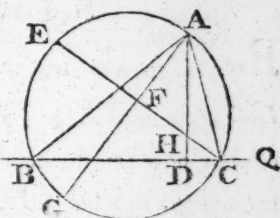
the flux. of h.l.  $\frac{a + x^{\frac{3}{2}}}{a - x^{\frac{3}{2}}}$  is  $\frac{3ax^{\frac{1}{2}} \dot{x}}{a^2 - x^3}$ , which being multiplied by

$x^{\frac{3}{2}}$ , and the correct fluent of it subtracted from the former quantity,

we have  $\frac{2}{3} x^{\frac{3}{2}} \times \text{h.l. of } \frac{a + x^{\frac{3}{2}}}{a - x^{\frac{3}{2}}} + \frac{2}{3} a \times \text{h.l. of } \frac{a^2 - x^3}{a^2} = \text{area}$

required,

C 2





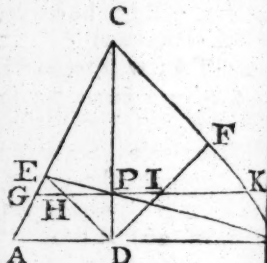
The same by Mr. Nathan Parnel.

PUT  $L = \text{hyp. log. of } a + x^{\frac{3}{2}} \div a - x^{\frac{3}{2}}$ ; then we shall have  $y \dot{x} = L x^{\frac{1}{2}} \dot{x} = L x^{\frac{1}{2}} \dot{x} + \frac{2}{3} x^{\frac{3}{2}} \dot{L} - \frac{2}{3} x^{\frac{3}{2}} \dot{L}$ , the fluxion of the area of the curve; now the fluent of the sum of the two first terms is  $\frac{2}{3} L x^{\frac{3}{2}}$ ; and because the fluxion of  $L$  is  $= 3 a x^{\frac{1}{2}} \dot{x} \times \overline{a^2 - x^3}^{-1}$ , we have  $\frac{2}{3} L x^{\frac{3}{2}} = 2 a x^2 \dot{x} \times \overline{a^2 - x^3}^{-1}$ , the correct fluent of which is  $\frac{2}{3} a \times \text{h. l. } \frac{a^2}{a^2 - x^3}$ ; and conseq.  $\frac{2}{3} L x^{\frac{3}{2}} - \frac{2}{3} a \times \text{h. l. } \frac{a^2}{a^2 - x^3} = \text{area of the curve.}$

Solutions were also given by Messrs. *Aspland, Brinkley, Fletcher, Harley, Lodge, Phillips, Rowe, Terril, Trelease, White, and Whitton.*

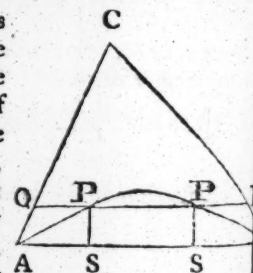
VI. Question 793 answered by the Proposer, Lieut. Glen.

IN this question, as proposed last year, difference is printed for differences, the meaning being, that the two differences between each part of the line and its distance from the parallel side AB, shall be to each other in the duplicate ratio of the parts themselves. To effect which, draw  $CD \perp AB$ , and DE to bisect the  $\angle ADC$ ; join BE cutting CD in P, the point required. For by parallel lines,  $GH : HP :: AD : DB$ ; and (drawing DIF to bisect  $\angle BDC$ ) (PI or)  $HP : IK :: AD : DB$ ; therefore by equalities  $GH : IK :: AD^2 : DB^2 :: GP^2 : PK^2$ .



The same answered by Mr. John Whitton, of Hull.

THERE may be found innumerable points P having the required property, and the locus of P is a certain curve APPB, the height of whose vertex above AB is  $= \frac{1}{3}$  of the height of C above AB. For let QR be any such line,  $\parallel AB$ , to be divided in P so, that  $PQ - PS$  shall be to  $PR - PS$  as  $PQ^2 : PR^2$ . Then I say this will be effected by dividing QR so that the rectangle  $PQ \times PR$  may be  $= PS \times QR$ . For the extremes and means being proportional, we have these two proportions  $\{ QR : PR :: PQ : PS \}$  then by division and  $\{ PQ : PR :: PQ - PS : PR - PS \}$   $\{ QR : PQ :: PR : PS \}$  altern. we have these  $\{ PQ : PR :: PS : PR - PS \}$  hence by equality  $PQ^2 : PR^2 :: PQ - PS : PR - PS$ , as required.



This question was also Geometrically answered by Messrs. *Aspland, Fletcher, Lodge, Sanderson, and Saul.* And Algebraically by Messrs. *Demonstratum, Lean, Reynolds, Robinson, Rowe, and Terril.*

VII. Question 794 answered by Mr. Mich. Taylor.

BY pa. 43 Simpson's Dissert. a degree of the meridian is very nearly  $= \frac{e}{\sqrt{a^2 - b^2}}$ , where  $e = \text{degree of the equator}$ ,  $d = \frac{23^\circ}{2}$ ,  $b = d$ .

$d$  = the sine of the latitude. And this, by the question, must be

$$e. \text{ Hences } s = \sqrt{\frac{d^2 - d^{\frac{2}{3}}}{b}} = \sqrt{\frac{d^2 - d^{\frac{2}{3}}}{d^2 - 1}} = \sqrt{\frac{1 + b - 1 + b^{\frac{1}{3}}}{b}}$$

$$= \sqrt{\frac{\frac{2}{3} + \frac{1}{9}b - \frac{5}{81}b^2 + \frac{10}{243}b^3 \&c.}{\frac{2}{3} \times 1 + \frac{1}{12}b - \frac{1}{20}b^2}}$$

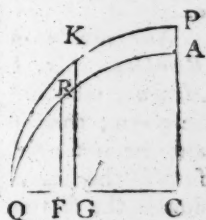
early, = .8170890 = the sine of  $54^\circ 47' 40''$ , the latitude required.

The same by Mr. Geo. Sanderfon.

LET K, R be two places on the sphere and spheroid having the same latitude; KG and RF  $\perp$  QC.

Let  $r = 230 = QC$ ,  $a = 229 = AC$ ,  $d^2 = r^2 - FC^2$ ,  $x = FC$ ,  $z = GC$  the cosine of the latitude to radius  $r$ .

The lengths of small arcs on the ellipse and circle, as the radii of curvature; and this in the sphere is



and in the spheroid is  $\frac{1}{ar^4} \times r^4 - d^2 x^2 \frac{3}{2} = r$  where the degrees

of equal lengths in both; and hence  $d^2 x^2 = r^4 - \frac{r^2}{ar^5} \frac{3}{2}$ . But because the tangents at K and R will be parallel, we shall have  $x^2 =$

$$\frac{r^4 z^2}{r^4 r^2 + d^2 x^2} = (\text{from the former}) \frac{r^4 - a^{\frac{2}{3}} r^{\frac{10}{3}}}{d^2}. \text{ And hence}$$

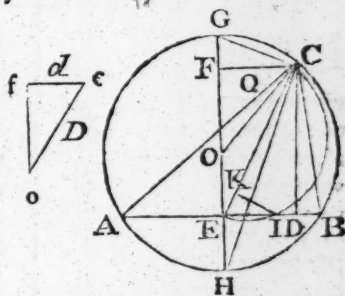
$$z = \frac{a}{d} \sqrt{\frac{r}{a}}^{\frac{2}{3}} - 1 = .5765191 = \text{cosine of } 54^\circ 47' 38''. \text{ To which}$$

add and subtract  $30'$ , and the degree from lat.  $54^\circ 17' 38''$  to lat.  $55^\circ 17' 38''$  is nearly equal to a degree on the equator.

This question was also answered by Messrs. *Aspland, Hartley, Lodge, Reynolds, Ross, Terrell, Trelease, and Whitton.*

VIII. Question 795 answered by Mr. Geo. Sanderfon.

CONSTR. Let CE be the given bisecting line,  $d$  half the given dif. of the sides,  $d$  to D in the given ratio of the dif. of the segments to the Diameter of the circum. circle, and D the hypotenuse of a right-angled triangle of  $fc$  having  $d$  for one of the sides of the right angle. On CE describe the segment of a circle to contain an angle equal to half the angle  $foc$  plus a right angle; on CE take EK :  $d ::$  CE; erect the perp. KI to meet the circle in I; draw EI and GH perp. to it; also draw CIH and CG perp.



to it; on the diameter GH describe a circle meeting EI in A and B; join AC and BC, and ABC is the triangle sought.

DEMONST. Let fall the perpendiculars CD, CF, and draw CO to the center of the circle. Because CG is  $\perp$  CH (by constr.) the circle passes through C, and CO is a radius; the  $\angle COF = 2\angle CHF$  ( $2\angle IHE$ ) (Euc. 20. 3); but  $\angle IHE$  plus a right angle =  $\angle CIE$  =  $\angle foc$  plus a right angle (by constr.) theref. the triangles FOC, foc are similar, and  $FC : CO :: fc : co :: 2FC : GH$ , where  $2FC = 2ED = AD - DB$ . Again,

because CH bisects  $\angle ACB$ , (Euc. 3, 6 and 17, 5)  $AC + CB : AC - CB :: AC - CB : AI - IB$  ( $2EI$ ), and by a well-known theorem  $AC + CB : AB :: AD - DB : 2ED$ ;  $AC - CB$ , whence  $2ED : AC - CB :: AC - CB : 2EI$ , therof. rectangle  $EI \times ED =$  a square on half the dif. of the fides: but, by the fim.  $\triangle s EIK, ECD$ , rect.  $EI \times ED = EK \times EC = d^2$  (by const),  $\therefore 2d = AC - CB$  as required. *Q. E. D.*

*Schol.* The  $\angle FOC = CBA - CAB$ , therefore the question is in effect the fame as the 4th in *The Mathematician*.

And nearly in this manner was the construction given by Mr. *Job Brinkley*. Mr. *Henry Clarke*, Mr. *N. Parnel*, and by the proposer *Amicus*, who also remarks that, if the sum instead of the dif. of the fides be given; then in the  $\triangle EGC$  are given the base  $EC$ , the opp.  $\angle EGC$  and the area: for letting fall  $GQ \perp AC$ , it is known that  $AQ$  is half the sum of the fides,  $\therefore AG^2 = GE \cdot GH$  is given, and confeq.  $GE \cdot FC$  double the said area, whence the  $\triangle EGC$  is given, and thence  $ACB$  before. -- A fimilar remark was made by Mr. *N. Parnel*, who also premifes these two lemmas, 1st, if the angles at the base of the  $\triangle ACB$  be both acute, then the rect.  $2ED \cdot 2EI = AC - CB^2$ ; and 2d, that the rect.  $4EG \cdot HF = AC + CB^2$ .

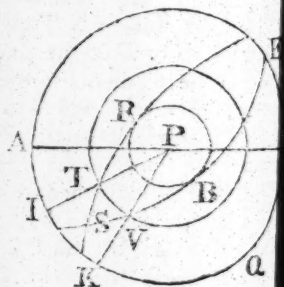
This problem was also constructed by Messrs. *Aspland*, *Doqueden Fletcher*, *Hartley*, *Lodge*, *Treleafe*, and *Whitton*. And Algebraic solutions were given by Messrs *Adams*, *Lean*, *Reynolds*, *Robinson*, *Rew*, *Sharp*, *Terril*, *Williams*, and *Wood*.

#### IX. Question 796 answered by Plus Minus.

SINCE no two stars can come to one azimuth in a given latitude, unless the great circle passing through them cut, or at least touch, the parallel of latitude; draw two great circles through the given star touching the given parallel of latitude, then they will cut the given parallel of declination in the points which have the greatest and least right ascension required.

The same answered by Nauticus.

IN the annexed projection let the primitive  $AEQ$  be the equinoctial,  $P$  its pole,  $S$  the given star,  $TV$  the parallel of declination of the other star whose greatest and least right-ascensions are sought,  $RBZ$  the path of the vertex of the given place. Through  $S$  draw two great circles to touch  $RBZ$  and cutting the parallel  $TV$  in  $T$  and  $V$ ; draw  $PTI$  and  $PVK$ ; so shall  $AI$  or the  $\angle API$ , and  $AK$  or the  $\angle APK$ , evidently be the greatest and least right-ascensions required;  $A$  being the first point of Aries.

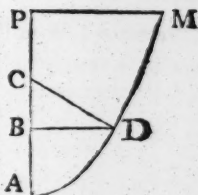


Ingenuous answers to this question were also given by Messrs. *Aspland*, *Fletcher*, *Hartley*, *Lodge*, *Sanderfon*, *Terril*, and *Whitton*.

#### X. Question 797 answered by Mr. John Whitton.

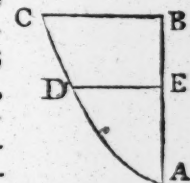
LET  $AM$  be the required curve,  $AP$  its axis,  $PM$  and  $BD \perp AP$ , and  $DC \perp$  to the curve  $ADM$  at  $D$ . Then, since the angular velocity is given or constant, the centrifugal force, in direction  $BD$ , at any point

of the curve, will be as BD, which resolves into the two forces BC, CD; of which the latter is destroyed by the curve, being perp. to it; therefore the former, or subnormal BC, is a constant quantity, being directly opposite and equal to the force of gravity; and conseq. the curve will be a parabola. And, its length being given, by means of the general expression for its length, we obtain  $AP = 9$ ,  $PM = 6$ ; and hence the area  $APM = 54$ .



The same by the Rev. Mr. John Hellins.

LET ADC be the curve into which the wire must be bent, D any point in it, and  $DE \perp AB$  the axis. Call  $AE, x$ ;  $DE, y$ ;  $AD, z$ ;  $32\frac{1}{8}, f$ ;  $3.1416, p$ ; and the time of one revolution, in seconds,  $n$ . Then, by mechanics,  $f\dot{x}\dot{z}^{-1}$  = the force of gravity in direction of the curve at D; also  $4p^2y\dot{n}^{-2}$  = the centrifugal force at D in direction ED, and theref. in direction of the curve it will be  $4p^2y\dot{y}\dot{n}^{-2}\dot{z}^{-1}$ ; and this must be equal to the above opposite force arising from gravity,  $n^2f\dot{x} = 4p^2y\dot{y}$ , and the fluents give  $n^2f = 2p^2y^2$ , or  $ax = yy$ , (putting  $f n^2 \div 2p^2 = a$ ), which is the equation of a parabola. Now the length of the curve of a parabola whose abscissa is 3, and semiordinate 2 feet, is  $\sqrt{10 + \frac{1}{3}h} \cdot l \cdot 3 + \sqrt{10} = 3.7684$  feet; hence  $11.3052 \div 3.7684 = 3$ ; theref.  $3 \times 3 = 9 = AB$ , and  $3 \times 2 = 6 = BC$ . Conseq.  $f n^2 \div 2p^2 = a = 36 \div 9 = 4$ , and  $n = p\sqrt{2a \div f} = 1.5667$  seconds  $= 1\frac{1}{30}$  sec. very nearly.



*Corol. 1.* The centrifugal force at C, the end of the bounding ordinate, or top of the curve,  $4p\dot{p}\dot{y} \div nn = 2fy \div a$ , is  $= 3f$ , three times the force of gravity.

*Cor. 2.* The force by which the ring is urged in direct. of the curve at C,

both by gravity and the centrif. force, is  $f \div \sqrt{1 + \frac{a}{4x}} = \frac{3f}{\sqrt{10}}$ .

*Cor. 3.* The pressure of the ring against the curve at C, is  $= \sqrt{ff + 9ff} = f\sqrt{10}$ , or the pressure is to the weight of the ring as  $\sqrt{10}$  to 1.

*Schol. 1.* In like manner may be solved a problem, agitated in the year 1770, between some gentlemen of my acquaintance, in the county of Devon, which I could wish the Editor would give me leave to insert here: it is this: *A hollow cylinder whose diameter is 4 feet, and depth 1 foot, being placed with its axis perpendicular to the horizon, filled with water, and made so to revolve about its axis that the water shall make one revolution every 4"; Query how much water will flow over it?* —Here,  $n$  being  $= 4$ , and  $y = 2$ , we have  $f n n \div 2p\dot{p} = 26.0732$ ,  $x = yy \div a = 0.15341$ , and  $\frac{1}{2}p\dot{x}yy = 0.96393$  of a solid foot,  $= 7.2107$  gallons wine measure, the quantity sought.

*Schol. 2.* By help of the parabola we may determine the point in any curve revolving about an axis perp. to the horizon with a given velocity, on which a ring being put, it shall neither approach to, nor recede from the axis: or, without farther trouble, from the equation  $f\dot{x} = 4p\dot{p}y\dot{y} \div nn$ , or  $a\dot{x} = 2y\dot{y}$ , by writing for either  $x$  or  $y$  and its fluxion the va-



lues obtained from the equation of the curve. For example, let the curve be a circle whose radius is  $r$ ; then  $2rx - xx = yy$ , and  $r\dot{x} - x\dot{x} = y\dot{y}$  which being written for  $y\dot{y}$ , and the whole divided by  $2\dot{x}$ , we have  $\frac{1}{2}a = r - x = \sqrt{rr - yy}$ ; where it is obvious that, if  $\frac{1}{2}a$  be equal to, or greater than  $r$ , the ring cannot remain in equilibrio at any distance from the axis; and that in all other cases it will be holden in equilibrio by the two contrary forces above-mentioned, at the extremity of the ordinate drawn perp. to the axis at the distance of  $\frac{1}{2}a$  below the center of the circle.

Solutions were also given by Messrs. *Aspland, Brinkley, Fletcher, Lodge, Rowe, and Terril.*

### XI. Question 798 answered by Mr. N. Parnel.

**ANALYSIS.** Suppose AB to be the A C D B E  
greater of the two given lines, BC  
= BE the less, and BD the part cut off  
from each of them: then by hypoth.  $AD : CD :: AB^2 : CB^2$ , and consequently  $AC (AD - CD) : CD :: AE \times AC (AB^2 - CB^2) : CB^2$ , theref.  $AE \times DC = BC^2$ ; and because AE and BC are given, DC is also given; hence this *Construction*: In the right line AE take AB the greater of the two given lines, BC = BE the other, and then take CD : CB :: CB : AE, and it is done. The demonstration is evicent from the analysis.

The same by Mr. James Adams.

**CONSTR.** On AC the sum of the two given E  
lines, AB, BC, make the rectangle AD =  
the rectangle AB  $\times$  BD; or take CD a fourth  
proportional to AC, AB, BC; so shall CD be  
the part sought. **DEMONSTR.** By constr.  
 $\left\{ \begin{array}{l} AC : BC :: AB : CD \\ AC : AB :: BC : CD \end{array} \right\}$  by divis. and invers.  $\left\{ \begin{array}{l} AB : BC :: AB - CD : CD, \\ AB : BC :: CD : BC - CD; \end{array} \right.$   
hence (Simp. Geom. iv. 11, &c.)  $AB^2 : BC^2 :: AB - CD : BC - CD$ .

Ingenious solutions were also given by Messrs. *Aspland, Atkinson, Brinkley, Clarke, Dalton, Demonstratum, Dorwden, Fletcher, Hampshire, Hartley, Honey, Latbam, Lean, Lodge, Reynolds, Rowe, Sanderson, Saul, Sharp, Terril, Trelase, White, Whitton, Williams, Wood, and F. Wragg.*

### XII. Question 799 answered by the Rev. Mr. Hellins.

**THE** extreme prices per chain are 10 and 6 pounds, their difference is 4, which put =  $a$ ; also put  $9 = b$ ,  $6 = c$ , any abscissa =  $x$ , its ordinate =  $y$ , and the value of the area =  $v$ . Then  $cc \div b = 4 = a$ , areafe  $y\dot{x} = \dot{x}\sqrt{ax} = \text{flux. of the area}$ , and  $c + axb^{-1} = \text{the rate of the value of the land at } y$ ; theref.  $y\dot{x} \times c + axb^{-1} = \dot{x} \cdot 'ax \times c + axb^{-1} = \dot{v}$ , and  $x\sqrt{ax} \times \frac{2}{3}c + \frac{2}{3}axb^{-1} = xy \times \frac{2}{3}c + \frac{2}{3}axb^{-1} = v$  which, when  $x$  becomes =  $b$ , is  $bc \times \frac{2}{3}c + \frac{2}{3}a = 302\frac{1}{2}l. = 302\frac{1}{2}l. 8s.$  the value of the field. And this divided by  $\frac{2}{3}bc$ , the area, gives  $c + \frac{3}{2}a = 8\frac{1}{2}l.$  for the mean price per chain, or  $8\frac{1}{2}l.$  per acre.

Now from what is done above we find the value of ADE to be  $y^3 a^{-1} \times \frac{2}{3}c + \frac{2}{3}y^2 b^{-1}$ , (see the following figure), and the value of the  $\square$  BE is = area BE  $\times$  mean rate between DE and BF = DE  $\times$  DB  $\times$

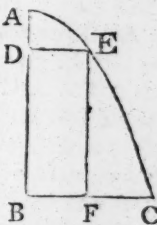
Curve  
=  $y\dot{y}$   
ve  $\frac{1}{2}a$   
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etcher,

$a + \frac{1}{2}c + \frac{1}{2}c + \frac{1}{2}axb^{-1} = \frac{1}{2}y \times b - x \times a + 2c + y^2b^{-1} =$   
 $y \times c + \frac{1}{2}a - y^3a^{-1} \times c + \frac{1}{2}y^2b^{-1}$ , and their sum by  $y \times c + \frac{1}{2}a$   
 $- y^3a^{-1} \times \frac{1}{2}c - \frac{1}{10}y^2b^{-1} =$  half the value of the field: in num-  
bers  $72y - \frac{1}{2}y^3 - \frac{1}{360}y^5 = 151.2$ , which equation has two affirma-  
tive roots, one negative, and two impossible; but  $y = 2.17314$  chains  
is the only one that can answer the conditions of the question.

The same answered by Mr N. Parnel.

E  
d con-  
CB<sup>2</sup>,  
DC is  
B the  
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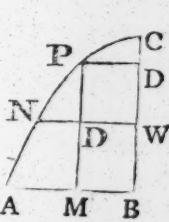
LET  $a = AB = 9$ ;  $b = BC = 6$  chains;  $c = 4$  pounds, A  
the value per square chain which the land along BC is  
worth more than at A;  $d = 6$  pounds, the price per square  
chain at A; and  $x = DE = BF$ . Then by the parabola  
we have  $b^2 : x^2 :: a : ax^2b^{-2} = AD$ ; hence  $a : AD$   
 $:: cx^2b^{-2}$ , the value per chain which the land along  
DE is worth more than at A; conseq.  $d + cx^2b^{-2} =$  the  
value along DE; and because  $a - ax^2b^{-2} \times \dot{x} =$  the  
fluxion of the space AEFB, it is evident that  $\frac{1}{2}c + d + \frac{1}{2}cx^2b^{-2} \times$   
 $- ax^2b^{-2} \times \dot{x} = \frac{1}{2}ac\dot{x} + ad\dot{x} - adx^2\dot{x}b^{-2} - \frac{1}{2}acx^4\dot{x}b^{-4}$   
 $=$  the fluxion of the value of the same space; the fluents of which are  
 $\frac{1}{2}acx + adx - \frac{1}{3}adx^3b^{-2} - \frac{1}{10}acx^5b^{-4} =$  the value of the  
space AEFB, which when  $x = b$  becomes  $\frac{2}{5}abc + \frac{2}{3}abd = 302.4$   
pounds, the value of the whole field ABC; and since the area ABC is  $=$   
 $\frac{1}{2}ab$  square chains  $= \frac{1}{15}ab$  acres  $= 3.6$  acres, we have  $\frac{2}{5}abc + \frac{2}{3}abd$   
 $= \frac{1}{15}ab = 6c + 10d = 84$  pounds, the mean price per acre. Again,  
when the value of the space AEFB is equal to the value of EFC, we  
shall have  $\frac{1}{2}acx + adx - \frac{1}{3}adx^3b^{-2} - \frac{1}{10}acx^5b^{-4} = \frac{1}{5}abc +$   
 $\frac{1}{10}abd$ , or  $25920x - 180x^3 - x^5 = 54432$ ; here  $x = 2.173$ , and  
hence the field is easily divided.



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The same by Mr. John Brinkley.

OUT  $AB = 6 = b$ ,  $BC = 9$  chains  $= a$ ,  $d = 100$   
pounds,  $c = 60$  pounds,  $r = 1$  acre  $= 10$  sq. chains,  
 $a = CD$ , and  $x = CW$ . Then  $PD = a^{-\frac{1}{2}}bxw^{\frac{1}{2}}$ ,  
 $NW = a^{-\frac{1}{2}}bx^{\frac{1}{2}}$ , and  $NO = a^{-\frac{1}{2}}b \times x^{\frac{1}{2}} - \tau w^{\frac{1}{2}}$ . But  
 $d - c :: a - x :: a - x \times d - c \times a^{-1} =$  the  
increase of the value per acre at NW, therefore  $d -$   
 $- x \times d - c \times a^{-1} =$  the value per acre at NW; and as the flux.  
of the area PNO is  $a^{-\frac{1}{2}}b \dot{x} \times x^{\frac{1}{2}} - \tau \dot{w}^{\frac{1}{2}}$ , the flux. of the value of PNO  
will be  $d - a - x \times d - c \times a^{-1} \times x^{\frac{1}{2}} - \tau w^{\frac{1}{2}} \times a^{-\frac{1}{2}}br^{-1} \dot{x}$ ;  
when taking the correct fluents by considering that when  $x = \tau w$ , the  
increment is  $= 0$ , and putting  $x = a$ , we get  
 $\times : \frac{3d + 2c}{15} 2a - \frac{d + c}{2} \sqrt{aw} + \frac{10ac + 3d\tau w - 3c\tau w}{30a} \tau w \sqrt{\frac{\tau w}{a}}$   
the value of PAM; which when  $\tau w = 0$  becomes  $3d + 2c \times \frac{2}{15}$





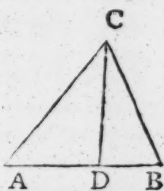
Whence it is manifest that quest. 768 may be constructed by the above method, and that the correction at pa. 46 last year is true, it being constructed on the same principles. And therefore that industrious corrector of pretended errors, the Compiler of the Math. Part of the T. and C. Mag. in the year 1782, has only exposed his own ignorance in objecting to it.

Mr. Henry Clarke also in a similar manner reduced this to the same construction with that of quest. 768, and also confirmed it by another elegant construction deduced from the easy quadratic equation to which he reduced the present question by the method of fluxions.

N. B. The perpendicular CD is omitted in the figure.

Another Solution by Mr. Rob. Dowden.

PUT the given sides AC and BC equal to  $a$  and  $d$ , and the  $\perp$  CD =  $x$ . Then AD =  $\sqrt{a^2 - x^2}$ , and BD =  $\sqrt{d^2 - x^2}$ ; therf. CD<sup>3</sup>  $\times$  AB =  $x^3 \sqrt{a^2 - x^2} + x^3 \sqrt{d^2 - x^2}$  = a max. the fluxion of which being made equal to nothing, and reduced, we obtain  $3 \cdot 4 - a^2 + d^2 \cdot 9x^2 = -9a^2 d^2$ , a quadratic equation, which may be easily constructed. Or because this equation is similar to that in pa. 47 last Diary, (only the squares of the quantities here for the simple quantities there), this may therefore be constructed from that in pa. 46 last Diary



Other ingenious solutions were given by Messrs. Adams, Aspland, Fletcher, Hartley, Honey, Lean, Lodge, Nicholson, Parnel, Reynolds, Robinson, Rowe, Terril, White, Whitton, and Williams.

XIV. Quest. 801 answered by Mr. John Aspland.

PUT  $a = 16 \frac{1}{12}$  feet; then the times of descent down AB, AC, AD, are respect.  $\sqrt{\frac{AB}{a}}$ ,  $\sqrt{\frac{AC}{a}}$ ,  $\sqrt{\frac{AD}{a}}$ ; and therf. the times in BC and CD

are respectively  $\frac{\sqrt{AC} - \sqrt{AB}}{\sqrt{a}}$  and  $\frac{\sqrt{AD} - \sqrt{AC}}{\sqrt{a}}$ ,

which call  $m$  and  $n$ ; hence the times in BE and

EF are respectively  $\frac{m}{BC} \times BE$  and  $\frac{n}{CD} \times EF$ ,

which put =  $p \times BE$  and  $q \times EF$  respectively;

hence then  $p \times BE + q \times EF$  = a maximum

the flux. of which being  $p \times \frac{CE}{BE} = q \times \frac{GF}{EF}$ , }

made = 0, gives us }

and hence we have this proportion, as sin.  $\angle CBE$  : sin.  $\angle GEF$  ::  $q$  :  $p$ ,

whence the distance CE may be found.

Corol. If BC = CD, then sin. CBE : sin. GEF ::  $n$  :  $m$  ::  $\sqrt{AD} - \sqrt{AC}$  :  $\sqrt{AC} - \sqrt{AB}$ . And if in this case AB be = 0, then will

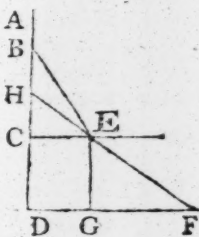
sin. CBE : sin. GEF ::  $\sqrt{2} - 1$  : 1. — Also, if FE be produced to meet

BC in H; then  $\angle CHE$  being =  $\angle GEF$ , and sin. CHE = sin. BHE,

and sin. HBE : sin. BHE :: HE : BE; therefore in all cases HE : BE

::  $q$  :  $p$  a given ratio; and when BC is = CD, it is HE : BE ::  $n$  :  $m$ ,

also when AB is = 0, it becomes HE : BE ::  $\sqrt{2} - 1$  : 1 as the dis-





ference between the diagonal and side of a square is to the side. So that the prob. reduces to this, in a line CE given in position to find a point E, so that from the given points B, F drawing BE, FE, and producing the latter to meet  $BC \perp CE$  in H; then BE to HE may have a given ratio.

The same by Mr. James Williams, of Plymouth Dock.

PUT  $AB = a$ ,  $BC = b$ ,  $CD = c$ ,  $DF = d$ ,  $16\frac{1}{2}$  feet (the force of gravity)  $= s$ , and  $CE = x$ ; hence, making  $EG \parallel CD$ ,  $GF = d - x$ , and  $BE = \sqrt{b^2 + x^2}$ , also  $EF = \sqrt{c^2 + d - x^2}$ . Then by the descent of gravity the times  $\left\{ \sqrt{\frac{a}{s}}, \sqrt{\frac{a+b}{s}}, \sqrt{\frac{a+b+c}{s}} \right\}$ ; of falling thro' AB, AC, AD, are  $\left\{ \sqrt{\frac{a}{s}}, \sqrt{\frac{a+b}{s}}, \sqrt{\frac{a+b+c}{s}} \right\}$ ; conseq. in BC and CD are  $\left\{ \sqrt{\frac{a+b}{s}} - \sqrt{\frac{a}{s}}, \sqrt{\frac{a+b+c}{s}} - \sqrt{\frac{a+b}{s}} \right\}$ , which put equal to  $m$  and  $n$  respectively, so shall the times in BE and EF be  $\frac{m}{b} \sqrt{b^2 + x^2}$  and  $\frac{n}{c} \sqrt{c^2 + d - x^2}$ , the sum of which must be a minimum, and the fluxion of which put  $= 0$  gives this equation - -

$$\frac{m}{b} \times \frac{x}{\sqrt{b^2 + x^2}} = \frac{n}{c} \times \frac{d - x}{\sqrt{c^2 + d - x^2}}, \text{ which being reduced there finally results a general biquadratic equation.}$$

Corol. 1. When C is in the middle of BD, then  $b = c$ , and  $m : n :: \sqrt{a+b} - \sqrt{a} : \sqrt{a+2b} - \sqrt{a+b}$ , and the equation is - -

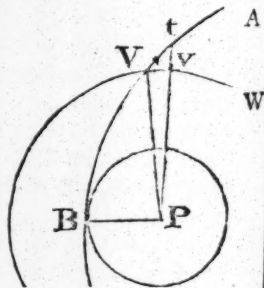
$$\frac{m}{n} \times \frac{x}{\sqrt{b^2 + x^2}} = \frac{d - x}{\sqrt{b^2 + d - x^2}}.$$

Corol. 2. And in that case if also AB or  $a$  be  $= 0$ , the equa. will be barely  $\frac{1}{\sqrt{2} - 1} \times \frac{x}{\sqrt{b^2 + x^2}}$  or  $\frac{1 + \sqrt{2} \cdot x}{\sqrt{b^2 + x^2}} = \frac{d - x}{\sqrt{b^2 + d - x^2}}$ .

True and ingenious solutions were given by Messrs. Brinkley, Lean, Lodge, Reynolds, Rowe, Sanderfon, Terricola, and Terril. — Solutions were also given by several other gentlemen, but they were not right.

XV. (or Prize) Quest. answered by the Proposer Plus Minus.

LET AB be a great circle of the sphere passing through any two known stars, P the pole of the world, WV a parallel of latitude, or track of the vertex of an observer, cutting the great circle AB in V. Then will the two stars in the great circle AB be in one azimuth, when the observer's vertex is at V, supposing them both to lie on the same side of the point V. But if the observer thinks he sees them in one azimuth, when his vertex is at  $v$ , join PV, Pv, producing the latter, if need be, to meet the great circle in  $t$ , you will have the angle VPv equal to the error in the time of

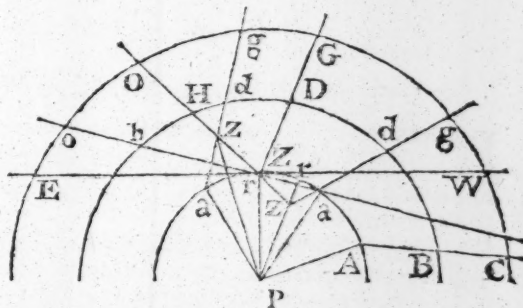


his observation, and vt the corresponding error in the observed latitude, so far as it depends on this single observation. — Now if we would inquire how proper this pair of stars is in that parallel of latitude WV, for the purpose of the observation mentioned in the question, let fall PB perp to the great circle AB; then in the spherical  $\triangle PBV$ , the side PB and the  $\angle PBV$  remaining constant, a very small variation of the  $\angle BPV$  will be to vt the corresponding variation of the side PV, as the tang  $\angle BVP$  to the sine of PV (by Cotes's *Æstimatio Errorum*, Theor. 13) that is, the error in time will be to the error in latitude, as the tang. of the azimuth from the pole to the cosine of the latitude of the observer. — Now what has been said of this observation is equally true of the other, and of both jointly. Therefore the nearer the observations are made to the prime vertical, the less will be the error in the latitude, and it will be ultimately infinitely less than the error of the time.

*Scholium.* The above solution is for the theorist; but for the sake of the practical astronomer it may be proper to remark, 1. That the error in latitude cannot be but very small if only one of the observations be made near the prime vertical. 2. That since any two stars which come to one azimuth, will be again in one azimuth on the other side of the prime vertical, and at the same distance from it, and moreover pass each other so very slowly in azimuth when near the prime vertical; it may be adviseable to chuse such stars as come to one azimuth twice or only once, or perhaps not at all. 3. If he make choice of two stars in one azimuth at about that distance from the east point northward (in these northern latitudes) and as near as may be to the horizon, he will be sure to have the same stars again in one azimuth at the same distance from the east southward, and of a convenient altitude. 4. That to find the true time of the observations as exactly as may be, he should note the time when he first begins to think the stars are arrived at one azimuth, and also the time when he is first sure they have passed each other, then take the mean for the true time of the observation. If these precautions be observed, this will be found an excellent practical method of finding the latitude of a place, as not depending on the accuracy of any instrument, nor on having a true meridian; nor is the observation disturbed by the refraction of the atmosphere: It is sufficient to have a clock that will truly measure the time elapsed between the two observations.

The same answered by Mr. George Sanderfon.

THE annexed scheme is a gnomonical projection on the plane of the equator; the points A and Z, in the circumference AaZa, the places of the observer's vertex at the first and second observations; BbDd and CgGg parallels of the stars declinations. It is



manifest that the angle ZPA represents the interval of time in which the observer ought to see the stars B and C, H and O, on the same azimuth

circles ABC and ZHO ; by means of which if the points B and C be removed to D and G, and through which a great circle be drawn, it will pass through Z, and the stars A and B will have apparently moved from the circle ZDG to ABC in the time the observer's vertex describes the arch AZ : Hence if the interval of time ( $\angle ZPA$ ) be given, the lat. may be found. On the plane of projection put the given stars A and B by means of their right ascensions and declinations, as also the stars H and O ; project the points G and D by means of the given time, thro' which and H, O describe great circles intersecting in Z ; draw PZ the tangent of the distance of Z from P, or the compl. of the lat. required.

But if the observed interval of time be greater or less than the true time ( $\angle ZPA$ ) by the angle ZPa, then gdza or gdaz is the great circle (projected on the plane by means of the observed time or  $\angle aPA$ ) cutting OHZ in z ; and if Pzr be drawn cutting the circumference AaZa in r, then zr is the error in lat. ; and this error will be the least possible when the circles ZHO and ZDG coincide with a great circle (ohZa) passing thro' Za. For suppose the observed time or  $\angle aPA$  less than the true time or  $\angle ZPA$ , and the stars H and O on the circle ohZa, then z falls in a, and  $zr = 0$ . Again if the  $\angle aPA$  be greater than ZPa, and the great circle ZDG coincide with ohZa, then the circle gdza passes thro' Z, (as is easily demonstrated) and  $zr = 0$ . Now if EZW be drawn to touch the circle AaZa in Z, the  $\angle EZo$  (WZa) is  $= \frac{1}{2} \angle ZPa$ , which being considered as very small, the  $\angle EZo$  (WZa) is nearly equal to the angle it represents on the sphere (Emers. Gnom. Proj. Prob. 12) wherefore the great circle ohZa may be considered in practice as coinciding with the great circle EZW ; but when the great circle ABC touches the circle AaZa, then ZDG coincides with EZW, and the stars B and C (seen at the first observation) will apparently move from EZW to ABC in the given interval of time ; therefore the prime vertical EZW may be considered as the great circle on which the observer must choose his stars. Whence it is manifest that the lat. may be found (and the error considered the least possible) by choosing two stars at the same time on the prime vertical ; for PZW being a right angle, a perp. (PZ) let fall on a great circle, drawn thro' the two stars (projected on the plane) is the cotang. of the lat. required.

Other solutions were received, but they were erroneous.

## NEW QUESTIONS.

### I. QUESTION 803 by Mr. James Wilson, Schoolmaster.

**L**ADIES, vouchsafe your kind advice  
To Susan of the vale:  
Richard has met the chamer twice,  
And told his tender tale;  
Henry also pursues the maid  
With every soothing art:

From what's below \* the age of each you'll find ;

That done, your judgment give, to quiet Susan's mind.

$$\begin{aligned} * x^3 y - xy^3 &= 983040 \\ x^4 + x^2 y^2 &= 3481600 \end{aligned} \quad \left. \begin{array}{l} \text{Where } x \text{ is Richard's age,} \\ \text{and } y \text{ is Henry's.} \end{array} \right\}$$

Richard has pelf, a thriving trade ;  
Henry an honest heart.  
Were you in lovely Susan's place,  
Say which would you approve,  
With Rd. gold and cares to wed,  
With Henry, only love.

## II. QUESTION 804 by Mr. J. Jackson, Ma. of Hutton-Rudby School.

THERE is a clock, whose teeth and wheels are as follows: The great wheel 72 teeth, the pinion that runs in it 8 leaves; the second wheel 60 teeth, its pinion 5 leaves; the hour wheel 48, and knut 12. Now there are two pallets, but the pallet, or crown wheel, is lost; I therefore demand what number of teeth a new crown wheel must have; The length of the pendulum being 39.2 inches?

## III. QUESTION 805 by Mr. Paul Sharp, of Biddenden.

OF all the common parabolas whose area is equal to 400, quere that which will circumscribe the greatest circle.

## IV. QUESTION 806 by Mr. Joel Lean, of Gwennap.

IN the reciprocal roots  $\frac{1}{\sqrt{1}} + \frac{1}{\sqrt{2}} + \frac{1}{\sqrt{3}} + \frac{1}{\sqrt{4}} + \frac{1}{\sqrt{5}} + \frac{1}{\sqrt{6}}$  &c. infinitely, the sum of all the terms in the odd places, is to the sum of those in the even places, namely  $\frac{1}{\sqrt{1}} + \frac{1}{\sqrt{3}} + \frac{1}{\sqrt{5}}$  &c. :

$\frac{1}{\sqrt{2}} + \frac{1}{\sqrt{4}} + \frac{1}{\sqrt{6}}$  &c. ::  $\sqrt{2} - 1 : 1$ . Quere the demonstration.

## V. QUESTION 807 by Mr. John Brinkley, at Harlston.

IN a plane triangle, given the vertical angle, the side of the inscribed square, and the rectangle of one side and its segment adjacent to the base made at the point of contact of the inscribed square. To determine the triangle.

## VI. QUESTION 808 by Mr. Alex. Rowe, of Reginnis.

AT a certain place in the spring quarter of the year 1781, the sun was observed to rise at 4 o'clock; and the same morning when his altitude was double the declination, the cosine of the altitude was to the sine of the latitude, as 8 to 9. Where and when did this happen?

## VII. QUESTION 809 by Mr. John Aspland.

GIVEN one side, the difference between the square of the other side and the square of the base, and the difference of the segments of the base made by a perpendicular from the vertical angle, of a plane triangle: To determine the triangle.

## VIII. QUESTION 810 by the Rev. Mr. John Hellins.

A Gentleman, remarkable for odd experiments, having a cask of wine whose content was 100 gallons, ordered a hole to be made in it, and at that instant a supply of water to keep it constantly full; out of which ran one gallon of mixture every 10 seconds. Now admitting that the liquor was always equally mixed throughout the cask, he desires to know how much wine was left in it one hour after the hole was made.

## IX. QUESTION 811 by Lieut. Glenie, of the Engineers.

FROM the right angle B of any right-angled triangle let BE be drawn to any point E in the opposite side AC; draw CD perpendicular to AC, meeting AB produced in D; join DE meeting BC in O; draw OL parallel to AB, meeting BE in Q: then shall the locus of every point Q be a right line. Required the demonstration.

## X. QUESTION 812 by Mr. Rob. Hartley.

LET the perpendicular height of a hay-rick, in form of a paraboloid, be 8 yards; the circumference of its base 36 yards; the weight of a cubic yard, every where of the same density as that at the center of the base, 200 pounds; and the perpendicular height of a section, made by part of it being cut away by a plane parallel to the axis, 4 yards: It is required to determine the weight of the whole hay-rick, and the weight of the part taken away; supposing the density to be every where as the perpendicular depth.

## XI. QUESTION 813 by Mr. Nathan Parnel.

GIVEN the magnitude and position of two circles; to draw two chords of the greater circle, so that they shall both be parallel to each other, have a given ratio, and both touch the less circle.



## XII. QUESTION 814 by Plus Minus.

A Conic section being given on a plane, it is required to describe the same in perspective, the positions of the eye and of the plane of the draught being given.  
N. B. The latter is, as usual, supposed to be perpendicular to the plane on which the given section is described.

## XIII. QUESTION 815 by Mr. Henry Clarke.

THE sum of the infinite series

$$\begin{aligned} \frac{1}{2}x - \frac{3}{2.4} + \frac{1}{3.4} \times x^{n+1} + \frac{3.5}{2.4.6} + \frac{3}{3.2.6} + \frac{1}{5.6} \times x^{2n+1} \\ - \frac{3.5.7}{2.4.6.8} + \frac{3.5}{3.2.4.8} + \frac{3}{5.2.8} + \frac{1}{7.8} \times x^{3n+1} \\ + \frac{3.5.7.9}{2.4.6.8.10} + \frac{3.5.7}{3.2.4.6.10} + \frac{3.5}{5.2.4.10} + \frac{3}{7.2.10} + \frac{1}{9.10} \times x^{4n+1} \\ \text{--- \&c. is } \left\{ \frac{ax^{1-\frac{1}{2}n} + x^{1-n}}{\sqrt{1+x^n}} - x^{1-n} \right\}; \end{aligned}$$

$\left\{ \begin{array}{l} a \text{ being the circular arc,} \\ \text{expressed by } \left\{ \begin{array}{l} \text{rad. } 1, \text{ tang. } x^{\frac{1}{2}n}, \text{ and} \end{array} \right. \end{array} \right.$

$n$  any positive number whatever. Required the investigation.

## XIV. QUESTION 816 by Nauticus.

IN determining the true right-ascension of the moon's center, as seen from the center of the earth, from the observed time of her limb's transiting the meridian, it is required to shew whether her semidiameter in right-ascension should be deducted from her horizontal semidiameter, or from her horizontal semidiameter increased on account of her altitude.

## XV. OR PRIZE QUESTION 817 by Mr. Geo. Sanderfon.

A Gentleman would have a triangular garden, whose side AC shall be 8 chains; and in the base AB are to be two gates, D and E, the one (E) at the extremity of the gravel walk from the opposite angle C, and at the distance of 12 chains from A, and the other (D) at the extremity of another walk also drawn from the angle C perpendicular to AB: moreover he would have the triangle ABC such, that a rectangle under 2AD and the distance EB may be equal to a square on CE; and, as there is to be a fish pond at B, that the angle ABC be the greatest possible. Now as his conveyer is unacquainted with the method of fluxions and the conic sections, he begs the assistance of your correspondents for a geometrical construction, and to furnish the trigonometrical calculation of the area of the whole triangle ABC.

## A QUERY by Terricola.

WHAT will be the ratios of the densities of the solar light, in the focus of a given burning glass, on Saturn, the Earth, and Mercury?

\*\*\* The prizes have been determined by lot as follows. First, for the solution of the prize question, to Mr. Geo. Sanderfon 12, and to Plus Minus 8 diaries.---2dly, for the solution of the prize enigma, to Mr. Rob. Richardson 10, and Mrs. B. Salisbury 8 diaries.---3dly, for the general solution of the enigmas, to Eugene 4, Mr. Rd. Dening each 10 diaries.---4thly, for the solution of the queries &c. to Wm. Turner 8, and to Mr. Geo. Lodge 8 diaries. All of whom will please to call on them to be called for at Stationers-hall, London.---All Letters for the use of the Diary must be directed thus, "For the Ladies' Diary, Stationers-Hall, London." Letters of Mr. J. Gamley, Mr. J. Bayley, Mr. J. Fletcher, Mr. Wm. Penn, Mr. T. Robinson, Mr. Alex. Rowe, and Mr. Geo. Simpkin, came not to the compiler's hands till after the diary copy was completed, so that the most he could do was only insert their names among the acknowledgments; the delay of the first of these, its being mislaid at the office, and the rest had been too late sent to the post by the authors: As also those by Messrs. P. Edgumbe, R. Jefferson, and J. Jones.

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